



6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R09-OAR-2017-0490; FRL-9984-91-Region 9]

Approval and Promulgation of Implementation Plans; California; South Coast Serious Area Plan for the 2006 PM_{2.5} NAAQS

AGENCY: U.S. Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to approve state implementation plan (SIP) revisions submitted by California to address Clean Air Act (CAA or “Act”) requirements for the 2006 24-hour fine particulate matter (PM_{2.5}) national ambient air quality standards (NAAQS or “standards”) in the Los Angeles-South Coast air basin (South Coast) Serious PM_{2.5} nonattainment area. The EPA is also proposing to approve 2017 and 2019 motor vehicle emissions budgets for transportation conformity purposes and inter-pollutant trading ratios for use in transportation conformity analyses.

DATES: Any comments must arrive by **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-R09-OAR-2017-0490 at <https://www.regulations.gov>, or via email to tax.wienke@epa.gov. For comments submitted at Regulations.gov, follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. For either manner of submission, the EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is

restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.*, on the web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the “**FOR FURTHER INFORMATION CONTACT**” section. For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <http://www2.epa.gov/dockets/commenting-epa-dockets>.

FOR FURTHER INFORMATION CONTACT: Wienke Tax, Air Planning Office (AIR-2), EPA Region IX, (415) 947-4192, tax.wienke@epa.gov.

SUPPLEMENTARY INFORMATION: Throughout this document, “we,” “us” and “our” refer to the EPA.

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I. Background

On October 17, 2006, the EPA revised the 24-hour NAAQS for PM_{2.5}, particulate matter with a diameter of 2.5 microns or less, to provide increased protection of public health by lowering the level from 65 micrograms per cubic meter (µg/m³) to 35 µg/m³.¹ Epidemiological studies have shown statistically significant correlations between elevated PM_{2.5} levels and premature mortality. Other important health effects associated with PM_{2.5} exposure include aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days), changes in lung function and increased respiratory symptoms. Individuals particularly sensitive to PM_{2.5} exposure include older adults, people with heart and lung disease, and children.² PM_{2.5} can be emitted directly into the atmosphere as a solid or liquid particle (“primary PM_{2.5}” or “direct PM_{2.5}”) or can be formed in the atmosphere as a result of various chemical reactions among precursor pollutants such as nitrogen oxides, sulfur oxides, volatile organic compounds, and ammonia (“secondary PM_{2.5}”).³

Following promulgation of a new or revised NAAQS, the EPA is required by CAA section 107(d) to designate areas throughout the nation as attaining or not attaining the NAAQS. On November 13, 2009, the EPA designated the South Coast as nonattainment for the 2006 24-hour PM_{2.5} standards.⁴ This designation became effective on December 14, 2009.⁵ The South

¹ 40 CFR 50.13 and 71 FR 61144 (October 17, 2006). The EPA first established NAAQS for PM_{2.5} on July 18, 1997 (62 FR 38652), including annual standards of 15.0 µg/m³ based on a 3-year average of annual mean PM_{2.5} concentrations and 24-hour (daily) standards of 65 µg/m³ based on a 3-year average of 98th percentile 24-hour concentrations (40 CFR 50.7). In 2012, the EPA revised the annual standards to lower them to 12 µg/m³ (78 FR 3086, January 15, 2013, codified at 40 CFR 50.18). Unless otherwise noted, all references to the PM_{2.5} standards in this notice are to the 2006 24-hour NAAQS of 35 µg/m³ codified at 40 CFR 50.13.

² 78 FR 3086 at 3088 (January 15, 2013).

³ 72 FR 20586, 20589 (April 25, 2007).

⁴ 74 FR 58688 (November 13, 2009).

⁵ 40 CFR 81.305.

Coast area is also designated nonattainment for the 1997 annual and 24-hour PM_{2.5} standards.⁶ On June 2, 2014, the EPA classified the South Coast area as “Moderate” nonattainment for both the 1997 PM_{2.5} standards and the 2006 PM_{2.5} standards under subpart 4 of part D, title I of the Act.^{7,8} California submitted a plan addressing the Moderate area attainment planning requirements for the 2006 PM_{2.5} NAAQS in the South Coast on February 13, 2013, and submitted a supplement to this plan on March 4, 2015.⁹

On January 13, 2016, the EPA published a December 22, 2015 final rule reclassifying the South Coast area as “Serious” nonattainment under subpart 4, based on the EPA’s determination that the area could not practicably attain the 2006 PM_{2.5} standards by the December 31, 2015 attainment date.¹⁰ This reclassification became effective on February 12, 2016. The reclassification was based upon the EPA’s evaluation of ambient air quality data from the 2013-2015 period, indicating that it was not practicable for certain monitoring sites within the South Coast area to show PM_{2.5} design values at or below the level of the 2006 PM_{2.5} NAAQS by December 31, 2015.¹¹ On April 14, 2016, we partially approved and partially disapproved

⁶ 70 FR 944 (January 5, 2005) and 40 CFR 81.305. In November 2007, California submitted the 2007 PM_{2.5} Plan to provide for attainment of the 1997 PM_{2.5} standards in the South Coast. In November 2011, the EPA approved all but the contingency measures in the 2007 PM_{2.5} Plan (76 FR 69928, November 9, 2011). In November 2011 and April 2013, the State submitted a revised contingency measure plan, which the EPA approved on October 29, 2013 (78 FR 64402).

⁷ 79 FR 31566.

⁸ The EPA took this action in response to a decision of the Court of Appeals for the D.C. Circuit finding that the EPA had erred in implementing the PM_{2.5} NAAQS pursuant solely to the general implementation provisions of subpart 1 of Part D, Title I of the Act, without also considering the particulate matter-specific provisions of subpart 4 of Part D. *Natural Resources Defense Council (NRDC) v. EPA*, 706 F.3d 428 (D.C. Cir. 2013).

⁹ Letter from James N. Goldstene, Executive Officer, California Air Resources Board (CARB), to Jared Blumenfeld, Regional Administrator, EPA Region IX, with attachments (transmitting 2012 PM_{2.5} Plan), February 13, 2013, and letter from Richard W. Corey, Executive Officer, CARB, to Jared Blumenfeld, Regional Administrator, EPA Region IX, with attachments (transmitting 2015 supplement to 2012 PM_{2.5} Plan), March 4, 2015.

¹⁰ 81 FR 1514 (January 13, 2016).

¹¹ *Id.* at 1514; *see also* proposed rule, 80 FR 63640 (October 20, 2015). Air quality data for 2013-2015 indicated that the highest monitors in the South Coast area had a design value of 38 µg/m³ for the 24-hour standard.

California's Moderate area plan for the 2006 PM_{2.5} NAAQS in the South Coast.¹² On February 12, 2018, we determined that California had corrected the deficiencies identified in our prior partial disapproval of this plan and terminated all sanction clocks triggered by that action.¹³

The South Coast PM_{2.5} nonattainment area is home to about 17 million people, has a diverse economic base, and contains one of the highest-volume port areas in the world. For a precise description of the geographic boundaries of the South Coast PM_{2.5} nonattainment area, *see* 40 CFR 81.305. The local air district with primary responsibility for developing a plan to attain the 2006 PM_{2.5} NAAQS in this area is the South Coast Air Quality Management District ("District" or SCAQMD). The District works cooperatively with the California Air Resources Board (CARB) in preparing these plans. Authority for regulating sources in the South Coast is split between the District, which has responsibility for regulating stationary and most area sources, and CARB, which has responsibility for regulating most mobile sources and some categories of consumer products.

As a consequence of its reclassification as a Serious PM_{2.5} nonattainment area, the South Coast area became subject to a new attainment date under CAA section 188(c)(2) and the requirement to submit a Serious area plan that satisfies the requirements of part D of title I of the Act, including the requirements of subpart 4, for the 2006 PM_{2.5} NAAQS.¹⁴ Under subpart 4, the attainment date for an area classified as Serious is as expeditiously as practicable, but no later than the end of the tenth calendar year following designation. As explained in the EPA's final reclassification action, the Serious area plan for the South Coast must include provisions to assure that the best available control measures (BACM) for the control of direct PM_{2.5} and PM_{2.5}

¹² 81 FR 22025 (April 14, 2016).

¹³ 83 FR 5923 (February 12, 2018).

¹⁴ 81 FR 1514, 1518 (January 13, 2016).

precursors shall be implemented no later than 4 years after the area is reclassified (CAA section 189(b)(1)(B)), and a demonstration (including air quality modeling) that the plan provides for attainment as expeditiously as practicable but no later than December 31, 2019, which is the latest permissible attainment date under CAA section 188(c)(2).¹⁵

Given the December 31, 2019 outermost attainment deadline for the South Coast area under section 188(c)(2), the EPA required the State to adopt and submit a Serious area plan for the South Coast within 18 months of the reclassification, well before the statutory SIP submission deadlines in CAA section 189(b)(2).¹⁶

II. Summary of the 2016 PM_{2.5} Plan

We are proposing action on portions of two California SIP submissions that address the 2006 24-hour PM_{2.5} NAAQS Serious area plan requirements in the South Coast. The first submission is the “Final 2016 Air Quality Management Plan (March 2017),” adopted by the SCAQMD Governing Board on March 3, 2017 (“2016 AQMP”). CARB submitted the 2016 AQMP to the EPA on April 27, 2017.¹⁷ The second submission, also submitted to the EPA on April 27, 2017, is CARB’s “2016 State Strategy for the State Implementation Plan (March 2017)” (“2016 State Strategy”).¹⁸ We refer to these SIP submissions collectively as the “2016 PM_{2.5} Plan” or “Plan.”

The 2016 AQMP is organized into eleven chapters, each addressing a specific topic. We summarize below each of the chapters relevant to the 2006 PM_{2.5} NAAQS.¹⁹ Chapter 1,

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ Letter from Richard Corey, Executive Officer, CARB, to Alexis Strauss, Acting Regional Administrator, EPA Region IX, with enclosures, April 27, 2017.

¹⁸ *Id.*

¹⁹ The following chapters in the 2016 AQMP are not relevant to the 2006 PM_{2.5} NAAQS and were not reviewed as part of today’s action: Chapter 7, “Current and Future Air Quality – Desert Nonattainment Areas,” describes the air quality status of the Coachella Valley, including emissions inventories, designations, and current and future air

“Introduction,” introduces the 2016 AQMP, including its purpose, historical air quality progress in the South Coast, and the District’s approach to air quality planning. Chapter 2, “Air Quality and Health Effects,” discusses current air quality in comparison with federal health-based air pollution standards. Chapter 3, “Base Year and Future Emissions,” summarizes emissions inventories, estimates current emissions by source and pollutant, and projects future emissions with and without growth. Chapter 4, “Control Strategy and Implementation,” presents the control strategy, specific measures, and implementation schedules to attain the air quality standards by the specified attainment dates. Chapter 5, “Future Air Quality,” describes the modeling approach used in the 2016 AQMP and summarizes the South Coast’s future air quality projections with and without the control strategy. Chapter 6, “Federal and State Clean Air Act Requirements,” discusses specific federal and State requirements as they pertain to the South Coast, including anti-backsliding requirements for revoked standards. Chapter 11, “Public Process and Participation,” describes the District’s public outreach effort associated with the development of the 2016 AQMP. A “Glossary” is provided at the end of the document, presenting definitions of commonly used terms found in the 2016 AQMP.

The 2016 AQMP also includes numerous technical appendices, listed below:

- Appendix I (Health Effects) presents a summary of scientific findings on the health effects of ambient air pollutants.
- Appendix II (Current Air Quality) contains a detailed summary of the air quality in 2014, along with prior year trends, in both the South Coast and the Coachella Valley.

quality; Chapter 8, “Looking Beyond Current Requirements,” assesses the South Coast air basin’s status with respect to the 2015 8-hour ozone standard of 70 ppb; Chapter 9, “Air Toxic Control Strategy,” examines the ongoing efforts to reduce health risk from toxic air contaminants, co-benefits from reducing criteria pollutants, and potential future actions; and Chapter 10, “Climate and Energy,” provides a description of current and projected energy demand and supply issues in the South Coast air basin, and the relationship between air quality improvement and greenhouse gas mitigation goals.

- Appendix III (Base and Future Year Emission Inventory) presents the 2012 base year emissions inventory and projected emission inventories of air pollutants in future attainment years for both annual average and summer planning inventories.
- Appendix IV-A (SCAQMD's Stationary and Mobile Source Control Measures) describes SCAQMD's proposed stationary and mobile source control measures to attain the federal ozone and PM_{2.5} standards.
- Appendix IV-B (CARB's Mobile Source Strategy) describes CARB's proposed 2016 strategy to attain health-based federal air quality standards.
- Appendix IV-C (Regional Transportation Strategy and Control Measures) describes the Southern California Association of Governments' (SCAG) "Final 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy" and transportation control measures included in the 2016 PM_{2.5} Plan.
- Appendix V (Modeling and Attainment Demonstrations) provides the details of the regional modeling for the attainment demonstration.
- Appendix VI (Compliance with Other Clean Air Act Requirements) provides the District's demonstration that the 2016 AQMP complies with specific federal and California Clean Air Act requirements.

The additional documents adopted by CARB on March 23, 2017 supplement the analysis and demonstrations adopted by the SCAQMD on March 3, 2017. In particular, the "CARB Staff Report, ARB Review of 2016 AQMP for the South Coast Air Basin and Coachella Valley," ("CARB Staff Report"), includes in Appendix D a weight of evidence analysis for the SCAQMD's attainment demonstration for the 24-hour and annual PM_{2.5} NAAQS. In addition, the 2016 State Strategy discusses additional statewide measures, including mobile source

measures, that will help the area reach attainment of the 2006 PM_{2.5} standards by the Serious area attainment date of December 31, 2019.

We present our evaluation of the 2016 PM_{2.5} Plan in Section V of this proposed rule.

III. Completeness Review of the 2016 PM_{2.5} Plan

CAA sections 110(a)(1) and (2) and 110(l) require each state to provide reasonable public notice and opportunity for public hearing prior to the adoption and submission of a SIP or SIP revision to the EPA. To meet this requirement, every SIP submission should include evidence that adequate public notice was given and an opportunity for a public hearing was provided consistent with the EPA's implementing regulations in 40 CFR 51.102.

Both the District and CARB satisfied applicable statutory and regulatory requirements for reasonable public notice and hearing prior to adoption and submission of the 2016 PM_{2.5} Plan. The District conducted numerous public workshops, provided a public comment period, and held a public hearing prior to the adoption of the 2016 AQMP on March 3, 2017.²⁰ CARB provided the required public notice and opportunity for public comment prior to its March 23, 2017 public hearing and adoption of the 2016 AQMP and the 2016 State Strategy.²¹ Each submission includes proof of publication of notices for the respective public hearings, and transcripts for the public hearings.²² We find, therefore, that the 2016 PM_{2.5} Plan meets the procedural requirements for public notice and hearing in CAA sections 110(a) and 110(l).

²⁰ SCAQMD, Notice of Public Hearing, Proposed 2016 Air Quality Management Plan for the South Coast Air Quality Management District and Report on the Health Impacts of Particulate Matter Air Pollution in the South Coast Air Basin, December 14, 2016.

²¹ CARB, "Notice of Public Meeting to Consider Adopting the 2016 Air Quality Management Plan for Ozone and PM_{2.5} for the South Coast Air Basin and the Coachella Valley," March 6, 2017.

²² See Memorandum from Denise Garzaro, Clerk of the Board, SCAQMD, to Arlene Martinez, Administrative Secretary, Planning, Rule Development, and Area Sources, SUBJECT: SIP Documentation, January 24, 2017. See also California Air Resources Board, Notice of Public Meeting to Consider Adopting the 2016 Air Quality Management Plan for Ozone and PM_{2.5} for the South Coast Air Basin and the Coachella Valley, March 6, 2017.

CAA section 110(k)(1)(B) requires the EPA to determine whether a SIP submission is complete within 60 days of receipt. This section also provides that any plan that the EPA has not affirmatively determined to be complete or incomplete will become complete by operation of law six months after the date of submission. The EPA's SIP completeness criteria are found in 40 CFR part 51, Appendix V. The 2016 PM_{2.5} Plan, which CARB submitted on April 27, 2017, became complete by operation of law on October 27, 2017.

IV. Clean Air Act Requirements for PM_{2.5} Serious Area Plans

A. PM_{2.5} Serious Area Plan Requirements

Upon reclassification of a Moderate nonattainment area as a Serious nonattainment area under subpart 4, the CAA requires a state to submit the following Serious area SIP elements:²³

1. A comprehensive, accurate, current inventory of actual emissions from all sources of PM_{2.5} and PM_{2.5} precursors in the area (CAA section 172(c)(3));
2. Provisions to assure that BACM, including best available control technology (BACT), for the control of direct PM_{2.5} and PM_{2.5} precursors shall be implemented no later than 4 years after the area is reclassified (CAA section 189(b)(1)(B));
3. A demonstration (including air quality modeling) that the plan provides for attainment as expeditiously as practicable but no later than December 31, 2019 (CAA sections 188(c)(2) and 189(b)(1)(A));
4. Plan provisions that require reasonable further progress (RFP) (CAA section 172(c)(2));
5. Quantitative milestones that are to be achieved every 3 years until the area is redesignated attainment and that demonstrate RFP toward attainment by the applicable date (CAA section 189(c));

²³ See 81 FR 1514 (January 13, 2016) and 81 FR 58010 (August 24, 2016).

6. Provisions to assure that control requirements applicable to major stationary sources of PM_{2.5} also apply to major stationary sources of PM_{2.5} precursors, except where a state demonstrates to the EPA's satisfaction that such sources do not contribute significantly to PM_{2.5} levels that exceed the standard in the area (CAA section 189(e));
7. Contingency measures to be implemented if the area fails to meet RFP or to attain by the applicable attainment date (CAA section 172(c)(9)); and
8. A revision to the nonattainment new source review (NSR) program to lower the applicable "major stationary source" thresholds from 100 tons per year (tpy) to 70 tpy (CAA section 189(b)(3)).²⁴

Serious area PM_{2.5} plans must also satisfy: the requirements for Moderate area plans in CAA section 189(a), to the extent those requirements have not already been satisfied in the Moderate area plan submitted for the area; the general requirements applicable to all SIP submissions under section 110 of the CAA; the requirement to provide necessary assurances that the implementing agencies have adequate personnel, funding and authority under CAA section 110(a)(2)(E); and the requirements concerning enforcement provisions in CAA section 110(a)(2)(C).

The EPA provided its preliminary interpretations of the CAA's requirements for particulate matter plans under part D, title I of the Act in the following guidance documents: (1) "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990" ("General Preamble");²⁵ (2) "State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990;

²⁴ For any Serious area, the terms "major source" and "major stationary source" include any stationary source that emits or has the potential to emit at least 70 tons per year of PM₁₀ (CAA section 189(b)(3)).

²⁵ 57 FR 13498 (April 16, 1992).

Supplemental” (“Supplement”);²⁶ and (3) “State Implementation Plans for Serious PM-10 Nonattainment Areas, and Attainment Date Waivers for PM-10 Nonattainment Areas Generally; Addendum to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990” (“Addendum”).²⁷

Additionally, in an August 24, 2016 final rule entitled, “Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements” (“PM_{2.5} SIP Requirements Rule”),²⁸ the EPA established regulatory requirements and provided further interpretive guidance on the statutory SIP requirements that apply to areas designated nonattainment for the PM_{2.5} standards. We discuss these regulatory requirements and interpretations of the Act as appropriate in our evaluation of the 2016 PM_{2.5} Plan in section V of this proposed rule.

V. Review of the South Coast Serious Area Plan Addressing the 2006 PM_{2.5} NAAQS

A. Emissions Inventory

1. Requirements for Emissions Inventories

CAA section 172(c)(3) requires that each SIP include a comprehensive, accurate, current inventory of actual emissions from all sources of the relevant pollutant or pollutants in the nonattainment area. This base year emissions inventory should provide a state’s best estimate of actual emissions from all sources of the relevant pollutants in the area, *i.e.*, all emissions that contribute to the formation of a particular NAAQS pollutant. For the PM_{2.5} NAAQS, the base year inventory must include direct PM_{2.5} emissions, separately reported filterable and condensable PM_{2.5} emissions, and emissions of all chemical precursors to the formation of

²⁶ 57 FR 18070 (April 28, 1992).

²⁷ 59 FR 41998 (August 16, 1994).

²⁸ 81 FR 58010.

secondary PM_{2.5}: nitrogen oxides (NO_x), sulfur dioxide (SO₂), volatile organic compounds (VOC), and ammonia (NH₃).²⁹

A state must include in its SIP submission documentation explaining how the emissions data were calculated. In estimating mobile source emissions, a state should use the latest emissions models and planning assumptions available at the time the SIP is developed. A state is also required to use the EPA's *Compilation of Air Pollutant Emission Factors* ("AP-42") road dust method for calculating re-entrained road dust emissions from paved roads.^{30, 31} The latest EPA-approved version of California's mobile source emission factor model for estimating tailpipe, brake and tire wear emissions from on-road mobile sources is EMFAC2014.³²

In addition to the base year inventory submitted to meet the requirements of CAA section 172(c)(3), the State must also submit a projected attainment year inventory and emissions projections for each reasonable further progress (RFP) milestone year.³³ These future emissions projections are necessary components of the attainment demonstration required under CAA

²⁹ 40 CFR 51.1008.

³⁰ The EPA released an update to AP-42 in January 2011, which revised the equation for estimating paved road dust emissions based on an updated data regression that included new emission tests results. *See* 76 FR 6328 (February 4, 2011). CARB used the revised 2011 AP-42 methodology in developing on-road mobile source emissions; *see* https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf.

³¹ AP-42 is the EPA's *Compilation of Air Pollutant Emission Factors*, and has been published since 1972 as the primary source of the EPA's emission factor information. It contains emission factors and process information for more than 200 air pollution source categories. A source category is a specific industry sector or group of similar emitting sources. The emission factors have been developed and compiled from source test data, material balance studies, and engineering estimates.

³² 80 FR 77337 (December 14, 2015). EMFAC is short for Emission Factor. The EPA announced the availability of the EMFAC2014 model for use in state implementation plan development and transportation conformity in California on December 14, 2015. The EPA's approval of the EMFAC2014 emissions model for SIP and conformity purposes was effective on the date of publication of the notice in the *Federal Register*. EMFAC2014 must be used for all new regional emissions analyses and CO, PM₁₀ and PM_{2.5} hot-spot analyses that are started on or after December 14, 2017, which is the end of the grace period for EMFAC2014.

³³ *See* 40 CFR 51.1008 and 51.1012; *see also* U.S. EPA, "Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations" (July 2017), available at <https://www.epa.gov/air-emissions-inventories/air-emissions-inventory-guidance-implementation-ozone-and-particulate>.

section 189(a)(1) and (b)(1) and the demonstration of RFP required under section 172(c)(2).³⁴

Emissions projections for future years (referred to in the 2016 PM_{2.5} Plan as “baseline inventories” or “future baseline inventories”) should account for, among other things, the ongoing effects of economic growth and adopted emissions control requirements. The SIP should include documentation to explain how the emissions projections were calculated.

2. Emissions Inventories in the 2016 PM_{2.5} Plan

The annual average daily planning inventories for direct PM_{2.5} and all PM_{2.5} precursors (NO_x, SO_x, VOC, and ammonia)³⁵ for the South Coast PM_{2.5} nonattainment area together with documentation for the inventories are found in Chapter 3, Appendix III and Appendix V of the 2016 AQMP. Appendix V also contains additional inventory documentation specific to the air quality modeling inventories. These portions of the 2016 AQMP contain annual average daily inventories of actual emissions for the base year of 2012 and projected inventories for the future RFP baseline year of 2017 and the attainment year of 2019, as well as the post-attainment RFP year of 2020.³⁶ The annual average daily inventory is used to evaluate sources of emissions for attainment of the 24-hour PM_{2.5} NAAQS.

Future emissions forecasts are primarily based on demographic and economic growth projections provided by SCAG, the metropolitan planning organization (MPO) for the Los Angeles area. Baseline inventories reflect all district control measures adopted prior to December

³⁴ See 40 CFR 51.1004, 51.1008, 51.1011, and 51.1012.

³⁵ The 2016 PM_{2.5} Plan generally uses “sulfur oxides” or “SO_x” in reference to SO₂ as a precursor to the formation of PM_{2.5}. We use “SO_x” and “SO₂” interchangeably throughout this notice.

³⁶ The 2016 PM_{2.5} Plan includes summer day inventories for ozone planning purposes and both a Moderate area plan and a Serious area plan for the 2012 PM_{2.5} NAAQS. The 2016 PM_{2.5} Plan therefore includes annual average and summer day inventories for all years between 2017 and 2031, except 2029.

2015 and CARB rules adopted by November 2015. Growth factors used to project these baseline inventories are derived mainly from data obtained from SCAG.³⁷

The emissions inventory is divided into two major source classifications: stationary sources and mobile sources, which include on-road and non-road sources of emissions. Stationary sources include point and area sources. Point sources in the South Coast air basin that emit more than 4 tons per year (tpy) or more of VOC, NO_x, SO₂, or PM report annual emissions to the District. Point source emissions for the 2012 base year emissions inventory are generally based on reported data from facilities using the District's Annual Emissions Reporting (AER) program.³⁸ Area sources include smaller emissions sources distributed across the nonattainment area. CARB and the District estimate emissions for about 400 area source categories using established inventory methods, including publicly-available emission factors and activity information. Activity data may come from national survey data such as from the Energy Information Administration or from local sources such as the Southern California Gas Company, paint suppliers, and district databases. Emission factors can be based on a number of sources including source tests, compliance reports, and the EPA's AP-42.

Emissions inventories are constantly being revised and improved. Between the finalization of California's plan addressing Moderate area requirements for the 2006 PM_{2.5} NAAQS in the South Coast ("2012 PM_{2.5} Plan") and the development of the 2016 PM_{2.5} Plan, the District improved and updated its emissions estimation methodologies for liquefied petroleum gas combustion sources, natural gas combustion sources, NO_x emission sources subject to the District's Regional Clean Air Incentives Market (RECLAIM) program (based on 2015 program

³⁷ See 2016 AQMP, Appendix III, page III-2-6.

³⁸ See <http://www.aqmd.gov/regulations/compliance/annual-emission-reporting>.

amendments), livestock waste management operations, gasoline dispensing facilities, composting operations, oil and gas production, and architectural coatings.

On-road emissions inventories are calculated using CARB's EMFAC2014 model and the travel activity data provided by SCAG in "The 2016-2040 Regional Transportation Plan / Sustainable Communities Strategy."³⁹ Re-entrained paved road dust emissions were calculated using the EPA's AP-42 road dust methodology.⁴⁰

CARB provided emission inventories for off-road equipment, including construction and mining equipment, industrial and commercial equipment, lawn and garden equipment, agricultural equipment, ocean-going vessels, commercial harbor craft, locomotives, cargo handling equipment, pleasure craft, and recreational vehicles. CARB uses several models to estimate emissions for more than one hundred off-road equipment categories.⁴¹ Aircraft emissions are developed in conjunction with the airports in the region.

Table 1 provides a summary of the District's 2012 base year emissions estimates as annual averages, for direct PM_{2.5} and all PM_{2.5} precursors. These inventories provide the basis for the control measure analysis and the RFP and attainment demonstrations in the 2016 PM_{2.5} Plan. For a more detailed discussion of the inventories, see Appendix III of the 2016 AQMP.

Table 1. South Coast 2012 Base Year Emissions (annual average, tons/day)

	Direct PM_{2.5}	NO_x	SO₂	VOC	Ammonia
Stationary and Area Sources	44	70	10	212	63
On-Road Mobile Sources	14	317	2	158	18
Off-Road Mobile Sources	8	153	6	100	0
Total	66	540	18	470	81

Source: 2016 AQMP, Chapter 3, Table 3-1A. Values may not be precise due to rounding.

³⁹ See <http://scagrtpscsc.net/Pages/FINAL2016RTPSCS.aspx>.

⁴⁰ See CARB, Miscellaneous Process Methodology 7.9 Entrained Road Travel, Paved Road Dust, (Revised and updated, November 2016) available at https://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf.

⁴¹ See 2016 PM_{2.5} Plan, Appendix III, p. III-1-24.

Condensable Particulate Matter

The PM_{2.5} SIP Requirements Rule states that “[t]he inventory shall include direct PM_{2.5} emissions, separately reported PM_{2.5} filterable and condensable emissions, and emissions of the scientific PM_{2.5} precursors, including precursors that are not PM_{2.5} plan precursors pursuant to a precursor demonstration under § 51.1006.”⁴² On June 26, 2018, SCAQMD submitted a technical supplement containing emissions estimates for both condensable and filterable PM_{2.5} emissions from specified sources of direct PM_{2.5} in the South Coast area.⁴³ The supplement provides filterable and condensable emissions estimates, expressed as annual average PM_{2.5} emissions, for all of the identified source categories for the 2012 base year, the 2017 RFP year, and the 2019 attainment year, as well as subsequent years.⁴⁴

The 2016 PM_{2.5} Plan relies on several SIP-approved rules that regulate direct PM emissions as part of the PM_{2.5} control strategy (*e.g.*, Rule 445 (Wood-Burning Devices), adopted March 7, 2008, most recently revised May 3, 2013; Rule 1138 (Control of Emissions from Restaurant Operations), adopted November 14, 1997; and Rule 1155 (Particulate Matter (PM) Control Devices), adopted December 4, 2009, amended May 2, 2014). As part of our action on any rules that regulate direct PM_{2.5} emissions, we evaluate the emissions limits in the rule to ensure that they appropriately address condensable PM, as required by 40 CFR 51.1010(e). We note that the SIP-approved version of Rule 1138 requires testing according to the District’s protocol, which requires measurement of both condensable and filterable PM in accordance with SCAQMD Test Method 5.1.⁴⁵ We also note that the SIP-approved version of Rule 1155 requires

⁴² 40 CFR 51.1008(a)(1)(iv).

⁴³ Letter from Philip Fine, Deputy Executive Officer, SCAQMD, to Amy Zimpfer, Associate Director, EPA Region IX, regarding “Condensable and Filterable Portions of PM_{2.5} emissions in the 2016 AQMP,” June 26, 2018.

⁴⁴ *Id.* at Appendix A.

⁴⁵ See Rule 1138 (adopted November 14, 1997, approved July 11, 2001 at 66 FR 36170), paragraph (c)(1) and (g) and SCAQMD Protocol paragraph 3.1, and SCAQMD Protocol, *Determination of Particulate and Volatile Organic*

measurement of both condensable and filterable PM in accordance with SCAQMD Test Methods 5.1, 5.2, or 5.3 as applicable.^{46, 47}

3. EPA's Evaluation and Proposed Action

The emissions inventories in the 2016 PM_{2.5} Plan were made available to the public for comment and were subject to public hearing at both the District and State levels.⁴⁸

The inventories in the 2016 PM_{2.5} Plan are based on the most current and accurate information available to the State and District at the time the Plan and its inventories were being developed, including the latest EPA-approved version of California's mobile source emissions model, EMFAC2014, and the EPA's most recent AP-42 methodology for paved road dust.⁴⁹ The inventories comprehensively address all source categories in the South Coast and were developed consistent with the EPA's inventory guidance. In accordance with 40 CFR 51.1008(b), the 2012 base year is one of the three years for which monitored data were used for reclassifying the area to Serious, and it represents actual annual average emissions of all sources within the nonattainment area. Direct PM_{2.5} and all PM_{2.5} precursors are included in the inventories, and filterable and condensable direct PM_{2.5} emissions are identified separately. For these reasons, we are proposing to approve the 2012 base year emissions inventory in the 2016 PM_{2.5} Plan as meeting the requirements of CAA section 172(c)(3) and 40 CFR 51.1008. We are

Compound Emissions from Restaurant Operations, November 14, 1997 (available at [http://yosemite.epa.gov/R9/R9Testmethod.nsf/0/3D4DEB4D21AB4AAF882570AD005DFF69/\\$file/SC%20Rest%20emiss.pdf](http://yosemite.epa.gov/R9/R9Testmethod.nsf/0/3D4DEB4D21AB4AAF882570AD005DFF69/$file/SC%20Rest%20emiss.pdf)).

⁴⁶ See Rule 1155 (adopted December 4, 2009, revised May 2, 2014, approved into the SIP March 16, 2015 at 80 FR 13495), paragraph (e)(6).

⁴⁷ See SCAQMD Test Method 5.1, *Determination of Particulate Matter Emissions from Stationary Sources Using a Wet Impingement Train*, March 1989; SCAQMD Test Method 5.2, *Determination of Particulate Matter Emissions from Stationary Sources Using Heated Probe and Filter*, March 1989; and SCAQMD Test Method 5.3, *Determination of Particulate Matter Emissions from Stationary Sources Using an in-Stack Filter*, October 2005.

⁴⁸ See SCAQMD Board Resolution 17-2, p.3 and CARB Resolution 17-8, p. 4.

⁴⁹ CARB submitted the EMFAC2014 model to the EPA on May 21, 2015, and the EPA approved the model for use in California SIPs. 80 FR 77337 (December 14, 2015).

also proposing to find that the future baseline inventories in the Plan provide an adequate basis for the BACM, RFP, and attainment demonstrations in the 2016 PM_{2.5} Plan.

B. PM_{2.5} Precursors

1. Requirements for the Control of PM_{2.5} Precursors

The composition of PM_{2.5} is complex and highly variable due in part to the large contribution of secondary PM_{2.5} to total fine particle mass in most locations, and to the complexity of secondary particle formation processes. A large number of possible chemical reactions, often non-linear in nature, can convert gaseous SO₂, NO_x, VOC, and ammonia to PM_{2.5}, making them precursors to PM_{2.5}.⁵⁰ Formation of secondary PM_{2.5} may also depend on atmospheric conditions, including solar radiation, temperature, and relative humidity, and the interactions of precursors with preexisting particles and with cloud or fog droplets.⁵¹

The 2007 PM_{2.5} Implementation Rule contained rebuttable presumptions concerning the four PM_{2.5} precursors applicable to attainment plans and control measures related to those plans.⁵² Although the rule included presumptions that states should address SO₂ and NO_x emissions in their attainment plans, it also included presumptions that regulation of VOCs and ammonia was not necessary. Specifically, in 40 CFR 51.1002(c) (as effective July 1, 2007), the EPA provided, among other things, that a state was “not required to address VOC [and ammonia] as . . . PM_{2.5} attainment plan precursor[s] and to evaluate sources of VOC [and ammonia] emissions in the state for control measures,” unless the state or the EPA provided an

⁵⁰ EPA, Air Quality Criteria for Particulate Matter (EPA/600/P-99/002aF, October 2004), Chapter 3.

⁵¹ EPA, Regulatory Impact Analysis for the Final Revisions to the National Ambient Air Quality Standards for Particulate Matter (EPA/452/R-12-005, December 2012), p. 2-1.

⁵² 40 CFR 51.1002(c) (as effective July 1, 2007).

appropriate technical demonstration showing that emissions from sources of these pollutants “significantly contribute” to PM_{2.5} concentrations in the nonattainment area.⁵³

In *NRDC*, however, the United States Court of Appeals for the D.C. Circuit (“D.C. Circuit”) remanded the EPA’s 2007 PM_{2.5} Implementation Rule in its entirety, including the presumptions concerning VOC and ammonia in that rule.⁵⁴ Although the court expressly declined to decide the specific challenge to these presumptions concerning precursors,⁵⁵ the court cited CAA section 189(e)⁵⁶ to support its observation that “[a]mmonia is a precursor to fine particulate matter, making it a precursor to both PM_{2.5} and PM₁₀” and that “[f]or a PM₁₀ nonattainment area governed by subpart 4, a precursor is presumptively regulated.”⁵⁷ Consistent with the *NRDC* decision, the EPA now interprets the Act to require that under subpart 4, a state must evaluate all PM_{2.5} precursors for regulation unless, for any given PM_{2.5} precursor, it demonstrates to the Administrator’s satisfaction that such precursor does not contribute significantly to PM_{2.5} levels that exceed the NAAQS in the nonattainment area.

The provisions of subpart 4 do not define the term “precursor” for purposes of PM_{2.5}, nor do they explicitly require the control of any specifically identified PM precursor. The statutory definition of “air pollutant,” however, provides that the term “includes any precursors to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term ‘air pollutant’ is used.”⁵⁸ The EPA has

⁵³ 40 CFR 51.1002(c)(3), (4) (as effective July 1, 2007). *See also* 2007 PM_{2.5} Implementation Rule, 72 FR 20586 at 20589-97 (April 25, 2007).

⁵⁴ *NRDC v. EPA*, 706 F.3d 428 (D.C. Cir. 2013).

⁵⁵ *Id.* at 437, n. 10.

⁵⁶ Section 189(e) of the CAA states that “[t]he control requirements applicable under plans in effect under this part for major stationary sources of PM₁₀ shall also apply to major stationary sources of PM₁₀ precursors, except where the Administrator determines that such sources do not contribute significantly to PM₁₀ levels which exceed the standard in the area.”

⁵⁷ 706 F.3d at 436, n. 7 (D.C. Cir. 2013).

⁵⁸ *See* CAA section 302(g).

identified SO₂, NO_x, VOC, and ammonia as precursors to the formation of PM_{2.5}. Accordingly, the attainment plan requirements of subpart 4 apply to emissions of all four precursor pollutants and direct PM_{2.5} from all types of stationary, area, and mobile sources, except as otherwise provided in the Act (*e.g.*, CAA section 189(e)).

Section 189(e) of the Act requires that the control requirements for major stationary sources of direct PM₁₀ also apply to major stationary sources of PM₁₀ precursors, except where the Administrator determines that such sources do not contribute significantly to PM₁₀ levels that exceed the standard in the area. Section 189(e) contains the only express exception to the control requirements under subpart 4 (*e.g.*, requirements for reasonably available control measures (RACM) and reasonably available control technology (RACT), BACM and BACT, most stringent measures (MSM), and NSR) for sources of direct PM_{2.5} and PM_{2.5} precursor emissions. Although section 189(e) explicitly addresses only major stationary sources, the EPA interprets the Act as authorizing it also to determine, under appropriate circumstances, that regulation of specific PM_{2.5} precursors from other source categories in a given nonattainment area is not necessary. For example, under the EPA's longstanding interpretation of the control requirements that apply to stationary, area, and mobile sources of PM₁₀ precursors in the nonattainment area under CAA section 172(c)(1) and subpart 4,⁵⁹ a state may demonstrate in a SIP submission that control of a certain precursor pollutant is not necessary in light of its insignificant contribution to ambient PM₁₀ levels in the nonattainment area.⁶⁰

⁵⁹ General Preamble, 57 FR 13498 at 13539-42 (April 16, 1992).

⁶⁰ Courts have upheld this approach to the requirements of subpart 4 for PM₁₀. *See, e.g., Assoc. of Irrigated Residents v. EPA, et al.*, 423 F.3d 989 (9th Cir. 2005).

The PM_{2.5} SIP Requirements Rule recognizes that the treatment of PM_{2.5} precursors is an important issue in developing a PM_{2.5} attainment plan.⁶¹ The rule provides flexibility for areas where a particular PM_{2.5} precursor or precursors may not contribute significantly to PM_{2.5} levels that exceed the NAAQS. The rule provides for optional precursor demonstrations that a state may choose to submit to the EPA to establish that sources of particular precursors need not be regulated for purposes of attainment planning or in the nonattainment NSR (NNSR) permitting program for a specific nonattainment area.

We are evaluating the 2016 PM_{2.5} Plan in accordance with the presumption embodied within subpart 4 that all PM_{2.5} precursors must be addressed in the State's evaluation of potential control measures, unless the State adequately demonstrates that emissions of a particular precursor or precursors do not contribute significantly to ambient PM_{2.5} levels that exceed the PM_{2.5} NAAQS in the nonattainment area. In reviewing any determination by the State to exclude a PM_{2.5} precursor from the required evaluation of potential control measures, we consider both the magnitude of the precursor's contribution to ambient PM_{2.5} concentrations in the nonattainment area and the sensitivity of ambient PM_{2.5} concentrations in the area to reductions in emissions of that precursor.

2. Evaluation of Precursors in the 2016 PM_{2.5} Plan

The 2016 PM_{2.5} Plan discusses the five primary pollutants that contribute to the mass of the ambient aerosol (*i.e.*, ammonia, NO_x, SO₂, VOC, and directly emitted PM_{2.5}) and states that various combinations of reductions in these pollutants could all provide a path to clean air.⁶²

The 2016 PM_{2.5} Plan assesses and presents the relative effectiveness of each ton of precursor

⁶¹ See, *e.g.*, 81 FR 58010 at 58017.

⁶² 2016 PM_{2.5} Plan, Appendix VI, p. VI-F-1, as well as Appendix V, p. V-5-51 and Appendix V, Attachment 8, Relative Contributions of Precursor Emissions Reductions to Simulated Controlled Future-Year 24-hour PM_{2.5} Concentrations.

emission reductions, considering the resulting ambient improvements in PM_{2.5} air quality measured in micrograms per cubic meter.⁶³ As presented in the weight of evidence discussion in the 2016 PM_{2.5} Plan, trends of PM_{2.5} and NO_x emissions suggest a direct response between lower emissions and improved air quality. The Community Multiscale Air Quality Modeling System (CMAQ) simulations in the 2016 PM_{2.5} Plan provide a set of response factors for direct PM_{2.5}, NO_x, SO₂ and VOCs, based on improvements to ambient 24-hour PM_{2.5} levels resulting from reductions of each pollutant. The contribution of ammonia emissions is embedded as a component of the SO₂ and NO_x factors because ammonium nitrate and ammonium sulfate are the resultant particulate species formed in the atmosphere.

The 2016 PM_{2.5} Plan describes how reductions in NO_x, SO₂, VOC and ammonia precursor emissions contribute to attainment of the PM_{2.5} standard in the South Coast area and contain the District's evaluation of available control measures for all four of these PM_{2.5} precursor pollutants, in addition to direct PM_{2.5}, consistent with the regulatory presumptions under subpart 4. The 2016 PM_{2.5} Plan also contains a discussion of the control requirements applicable to major stationary sources under CAA section 189(e).⁶⁴

3. Proposed Action

Based on a review of the information provided in the 2016 PM_{2.5} Plan and other information available to the EPA, we agree with the State's conclusion that all four chemical

⁶³ 2016 PM_{2.5} Plan, Appendix V, Attachment 8, Relative Contributions of Precursor Emissions Reductions to Simulated Controlled Future-Year 24-hour PM_{2.5} Concentrations.

⁶⁴ See 2016 PM_{2.5} Plan at Appendix VI-F. In a separate rulemaking to approve revisions to SCAQMD's nonattainment New Source Review (NNSR) program, the EPA determined that the control requirements applicable under the SCAQMD SIP to major stationary sources of direct PM_{2.5} also apply to major stationary sources of NO_x, SO₂, and VOC, and that major stationary sources of ammonia do not contribute significantly to PM_{2.5} levels which exceed the PM_{2.5} standards in the area. See 80 FR 24821 (May 1, 2015). This rulemaking addressed the control requirements of CAA section 189(e) only for NNSR purposes and not for attainment planning purposes under subpart 1 and 4 of part D, title I of the Act.

precursors to PM_{2.5} must be regulated for purposes of attaining the 2006 PM_{2.5} NAAQS in the South Coast area. We discuss the state's evaluation of potential control measures for direct PM_{2.5}, NO_x, SO₂, VOC and ammonia in section V.C below.

C. Best Available Control Measures

1. Requirements for Best Available Control Measures

For any serious PM_{2.5} nonattainment area, section 189(b)(1)(B) of the Act requires that a state submit provisions to assure that BACM for the control of PM_{2.5} and PM_{2.5} precursors shall be implemented no later than four years after the date the area is reclassified as a serious area. The EPA defines BACM as, among other things, the maximum degree of emissions reduction achievable for a source or source category, which is determined on a case-by-case basis considering energy, environmental, and economic impacts.⁶⁵ We generally consider BACM a control level that goes beyond existing RACM-level controls, for example by expanding the use of RACM controls or by requiring preventative measures instead of remediation.⁶⁶ Indeed, as implementation of BACM and BACT is required when a Moderate nonattainment area is reclassified as Serious due to its inability to attain the NAAQS through implementation of “reasonable” measures, it is logical that “best” control measures should represent a more stringent and potentially more costly level of control.⁶⁷

Section 189(b)(1)(B) of the Act allows states, in appropriate circumstances, to delay implementation of BACM until the date four years after reclassification. Because the EPA reclassified the South Coast area as a Serious area for the 2006 PM_{2.5} NAAQS effective February 12, 2016, the date four years after reclassification is February 12, 2020. In this case, however, all

⁶⁵ Addendum at 42010, 42013.

⁶⁶ *Id.* at 42011, 42013.

⁶⁷ *Id.* at 42009-42010.

BACM for PM_{2.5} and PM_{2.5} precursors in the South Coast must be implemented no later than December 31, 2019, the outermost statutory attainment date for the South Coast area under section 188(c)(2).⁶⁸

Under the PM_{2.5} SIP Requirements Rule, control measures that can be implemented in whole or in part by the end of the fourth year following an area's reclassification as a Serious area are considered BACM, and control measures that can only be implemented after this period but before the attainment date are considered "additional feasible measures."⁶⁹ The EPA has defined "additional feasible measures" as "those measures and technologies that otherwise meet the criteria for BACM/BACT but that can only be implemented in whole or in part beginning 4 years after reclassification of an area, but no later than the statutory attainment date for the area."⁷⁰ Given that the statutory attainment date is less than three years from the effective date of the reclassification of the South Coast area, additional feasible measures are not required in this particular case.

The Addendum and the PM_{2.5} SIP Requirements Rule discuss the following steps for determining BACM:

1. Develop a comprehensive emission inventory of the sources of directly-emitted PM_{2.5} and PM_{2.5} precursors;
2. Identify potential control measures;

⁶⁸ CAA section 189(b)(1)(B) establishes an outermost deadline ("no later than four years after the date the area is reclassified") and does not preclude an earlier implementation deadline for BACM where necessary to satisfy the attainment requirements of the Act.

⁶⁹ 40 CFR 51.1010(a)(4). "Additional feasible measures" may be necessary in certain circumstances to implement the requirements of CAA section 172(c)(6), which states that nonattainment area plans shall include enforceable emission limitations and such other control measures, means or techniques, as well as schedules and timetables for compliance, as may be necessary or appropriate to provide for attainment of the NAAQS by the applicable attainment date.

⁷⁰ 40 CFR 51.1000.

3. Determine whether an available control measure or technology is technologically feasible; and
4. Determine whether an available control technology or measure is economically feasible.⁷¹

Once these analyses are complete, a state must use this information to develop enforceable control measures and submit them to the EPA for evaluation under CAA section 110. We use these steps as guidelines in our evaluation of the BACM measures and related analyses in the 2016 PM_{2.5} Plan.

2. BACM Analysis in the 2016 PM_{2.5} Plan

a. Identifying the Sources of PM_{2.5} and PM_{2.5} Precursors

The first step in determining BACM is to develop a detailed emissions inventory of the sources of direct PM_{2.5} and PM_{2.5} precursors that can be used with modeling to determine the effects of these sources on ambient PM_{2.5} levels. As discussed in section V.A of this proposed rule, Chapter 3 and Appendix III of the 2016 AQMP contain the planning inventories for direct PM_{2.5} and all PM_{2.5} precursors (NO_x, SO₂, VOC, and ammonia) for the South Coast PM_{2.5} nonattainment area together with documentation to support these inventories. Based on these inventories, the District identified the following source categories as key emission sources in the South Coast nonattainment area:

- Residential Fuel Combustion – Wood Combustion – Wood Stoves
- Farming Operations – Livestock Wastes
- Paved Road Dust – Paved Road Travel Dust – Local Streets
- Cooking – Commercial Charbroiling

⁷¹ *Addendum*. at 42012-42014, and 81 FR 58010 (August 24, 2016) at 58084-58085.

- Other (Miscellaneous Processes) – Other⁷²
- Light-Duty Passenger- Catalyst Hot Stabilized
- Light-Duty Passenger – Catalyst Brake Wear
- Light-Duty Trucks 2 - Catalyst Hot Stabilized
- Medium-Duty Trucks - Catalyst Hot Stabilized
- Medium-Heavy-Duty Diesel Trucks – Diesel Hot Stabilized
- Heavy-Heavy-Duty Diesel Trucks – Diesel Hot Stabilized
- Commercial/Industrial Mobile Equipment – Construction and Mining.⁷³

Of these 12 source categories, the District identified four categories that it has the authority to regulate:

- Residential Fuel Combustion – Wood combustion – Wood stoves
- Farming operations – Livestock Waste
- Paved Road dust – Paved Road Travel Dust – Local Streets
- Cooking – Commercial Charbroiling.⁷⁴

Appendix VI of the 2016 AQMP identifies the stationary, area, and mobile sources of direct PM_{2.5}, NO_x, VOC, SO₂ and ammonia in the South Coast that are subject to State or District emissions control measures, or transportation control measures implemented by the SCAG. Table VI-A-6 of the 2016 AQMP lists the key source categories together with each source category's 2012 emissions levels expressed as "PM_{2.5}-equivalent" emissions in tons per day (tpd).

⁷² This source category includes ammonia emissions from humans, pets, diapers and household ammonia use. *See* electronic mail from Kalam Cheung, SCAQMD, to Wienke Tax, EPA Region IX, September 29, 2017.

⁷³ 2016 AQMP, Appendix VI, p. VI-A-14, Table VI-A-6.

⁷⁴ *Id.*

Based on this identification of stationary, area, and mobile sources of direct PM_{2.5}, NO_x, VOC, SO₂ and ammonia in the South Coast, we believe the 2016 PM_{2.5} Plan appropriately identifies all emission sources and source categories that must be subject to evaluation for potential control measures consistent with the requirements of subpart 4.

b. Identification and Implementation of BACM

As part of its process for identifying candidate BACM and considering the technical and economic feasibility of additional control measures, CARB, the District and SCAG reviewed the EPA's guidance documents on BACM, guidance documents on control measures for direct PM_{2.5}, NO_x, VOC, ammonia and SO₂ emissions sources, and control measures implemented in other ozone and PM_{2.5} nonattainment areas in California and other states. The State, District, and SCAG's evaluations of potential BACM for each source category identified above are found in Appendix IV-A, Appendix IV-B, Appendix IV-C, and Appendix VI of the 2016 AQMP. In the following sections, we review key components of the State, District, and SCAG's demonstrations concerning BACM for the identified sources of direct PM_{2.5}, NO_x, VOC, SO₂ and ammonia emissions in the South Coast. We provide a more detailed evaluation of several of the District's regulations in our technical support document (TSD),⁷⁵ together with recommendations for possible improvements to these rules.

Based on our evaluation of these demonstrations, we propose to determine that the 2016 PM_{2.5} Plan provides for the implementation of BACM for sources of direct PM_{2.5} and PM_{2.5} precursors as expeditiously as practicable, for the purposes of the 2006 PM_{2.5} NAAQS in the

⁷⁵US EPA Region 9, *Technical Support Document for the Proposed Approval of South Coast AQMD's Serious Area Plan for the 2006 PM_{2.5} National Ambient Air Quality Standards* (Docket Number EPA-R09-OAR-2017-0490), September 2018.

South Coast area in accordance with the requirements of CAA section 189(b)(1)(B) and 40 CFR 51.1010.

i. State and District Measures for Stationary and Area Sources

The District's BACM process and control measure evaluations are described in detail in Appendix IV-A and Appendix VI of the 2016 AQMP. For each identified source category, the District identified both its adopted control measures and potential additional control measures based on measures implemented in other areas, measures identified in EPA regulations or guidance (*e.g.*, in control technique guidelines (CTGs), alternative control technique documents (ACTs), new source performance standards (NSPSs), or in the EPA's "Menu of Control Measures for NAAQS Implementation"), or measures identified in prior EPA rulemaking documents (*e.g.*, recommendations in the EPA's technical support documents for prior SIP actions).^{76, 77} The District evaluated these potential additional control measures to determine whether implementation of the measures would be technologically and economically feasible in the South Coast.⁷⁸ In addition, the District considered other available control options (beyond those included in other SIPs or identified in federal/state regulations or guidance), such as measures that the State or District have previously considered "beyond RACM." The District also evaluated these potential control measures to determine whether implementation would be technologically and economically feasible in the South Coast.

Residential Wood-Burning Devices

SCAQMD Rule 445 ("Wood-Burning Devices"), amended May 3, 2013, establishes requirements for the sale, operation, and installation of wood-burning devices within the South

⁷⁶ 2016 AQMP, Appendix VI, pp. VI-A-12 to VI-A-36.

⁷⁷ The Menu of Control Measures can be found at <https://www.epa.gov/air-quality-implementation-plans/menu-control-measures-naaqs-implementation>.

⁷⁸ 2016 AQMP, Appendix VI, pp. VI-A-32 to VI-A-40.

Coast air basin that are designed to reduce PM emissions from such devices. The EPA approved Rule 445, as amended, into the California SIP on September 26, 2013.⁷⁹

Under Rule 445, persons who manufacture, sell, or install wood-burning devices, commercial firewood sellers, and property owners or tenants who operate wood-burning devices are subject to specific requirements concerning the types of wood-burning devices that may be manufactured, sold, or installed, the types of fuels that may be burned in such devices, and labeling requirements. Rule 445 also establishes a mandatory winter wood-burning curtailment whenever the Executive Officer declares that ambient PM_{2.5} levels are forecasted to exceed 30 µg/m³ at specified source receptor areas.

The District compared the requirements of Rule 445 to several rules implemented elsewhere in California that are designed to limit PM emissions from residential wood-burning devices. Based on this review, the District concludes that Rule 445 is generally equivalent to these other rules. Rule 445 does not require the removal of old wood stoves upon resale of a home, as do rules implemented in several other areas, but it does contain a categorical prohibition on the installation of any wood-burning device in new residential developments. Several other air districts prohibit or limit the installation of non-certified wood-burning devices but allow for installation of EPA-certified devices in new developments.

Based on our evaluation of the information provided in the 2016 AQMP and additional information obtained during our review of the Plan, we agree with the SCAQMD's conclusion that Rule 445 implements BACM for the control of PM_{2.5} from residential wood-burning devices.

⁷⁹ 78 FR 59249.

Confined Animal Facilities and Livestock Waste

SCAQMD Rule 1127 (“Emission Reductions from Livestock Waste”), adopted August 6, 2004, and Rule 223 (“Emission Reduction Permits for Large Confined Animal Facilities”), adopted June 2, 2006, together establish requirements to reduce emissions of ammonia, VOCs, and other pollutants emitted from confined animal facilities and related operations. The EPA approved Rule 1127 and Rule 223 into the California SIP on May 23, 2013 and July 13, 2015, respectively.⁸⁰

Rule 1127 applies to dairy farms with 50 or more cows, heifers, and/or calves and to manure processing operations, such as composting operations and anaerobic digesters. The rule requires operators of dairy farms and manure processing operations to use specified best management practices to reduce pollutant emissions during the removal and disposal of manure from corrals, among other things. Rule 223 applies to large confined animal facilities (LCAFs) and prohibits owners/operators of such facilities from building, altering, replacing or operating an LCAF without first obtaining a permit from the District. The permit application must include, among other things, an emissions mitigation plan that identifies the mitigation measures to be implemented at the facility. For each source category covered by the rule, owners/operators must implement a prescribed number of mitigation measures among a list of options or as approved by the District, CARB, and the EPA.

The District compared the key requirements of Rule 1127 and Rule 223 to analogous requirements implemented in other parts of California and in Idaho. Based on this evaluation, the District concludes that Rule 1127 and Rule 223 together establish requirements for confined animal facilities and related operations that are generally equivalent to the requirements in these

⁸⁰ 78 FR 30768 and 80 FR 39966.

other areas. The District also considered several additional control methods to further reduce ammonia emissions from livestock waste, including application of acidifiers (sodium bisulfate), dietary manipulation, feed additives, manure slurry injection, and microbial/manure additives. The 2016 AQMP contains a commitment by the District to adopt in 2019 an additional ammonia control measure for livestock waste to be implemented in 2020. The proposed measure is identified in the plan as BCM-04.⁸¹

Based on our evaluation of the information provided in the 2016 AQMP and additional information obtained during our review of the Plan, we agree with the SCAQMD's conclusion that Rule 1127 and Rule 223 together implement BACM for the control of ammonia and VOCs from confined animal facilities and related operations.

Paved and Unpaved Roads and Livestock Operations

Rule 1186 ("PM₁₀ Emissions from Paved and Unpaved Roads, and Livestock Operations"), amended July 11, 2008, establishes requirements to reduce the entrainment of particulate matter as a result of vehicular travel on paved and unpaved public roads and livestock operations. The EPA approved Rule 1186 into the California SIP on March 7, 2012.⁸²

Under Rule 1186, owners and operators of paved roads with average daily vehicle trips exceeding certain thresholds must remove visible roadway accumulation within specified periods of time and provide curbing or paved shoulders of certain widths when constructing new or widened roads. Rule 1186 also requires local government agencies that own or maintain paved roads to procure only certified street sweeping equipment for routine street sweeping; establishes requirements for owners and operators of certain unpaved roads to pave, apply chemical

⁸¹ See 2016 AQMP, Chapter 4, Table 4-7; 2016 AQMP, Appendix IV-A, pp. IV-A-202 to IV-A-209 (describing BCM-04); and SCAQMD, Governing Board Resolution No. 17-2 (March 3, 2017), at p. 9.

⁸² 77 FR 13495.

stabilization, or install signs to reduce vehicular speeds; and requires owners and operators of livestock operations to cease hay grinding activities during certain times of day, if visible emissions extend more than 50 feet from a hay grinding source.

The District compared the key requirements of Rule 1186 to analogous requirements implemented in other parts of California and in Nevada. Based on this evaluation, the District concludes that Rule 1186 is generally equivalent to the requirements in these other areas. To further reduce PM_{2.5} emissions in areas with high vehicular activity, the District also considered several additional control techniques, such as increasing the frequency of street sweeping with certified equipment and specifying the most effective track out prevention measures. The District concludes that an increase in the required frequency of street sweeping is not economically feasible at this time because most areas in the South Coast air basin already require regular street sweeping and a requirement to conduct more frequent street sweeping would achieve only minimal emission reductions.

Based on our evaluation of the information provided in the 2016 AQMP and additional information obtained during our review of the Plan, we agree with the SCAQMD's conclusion that Rule 1186 implements BACM for the control of PM_{2.5} from paved and unpaved roads and livestock operations.

Commercial Charbroiling

SCAQMD Rule 1138 ("Control of Emissions from Restaurant Operations"), adopted November 14, 1997, establishes control requirements to reduce PM and VOC emissions from "chain-driven" charbroilers at commercial cooking operations. The rule does not apply to "under-fired" charbroilers. EPA approved Rule 1138 into the California SIP on July 11, 2001.⁸³

⁸³ 66 FR 36170.

Under Rule 1138, chain-driven charbroilers that cook more than 875 pounds of meat per week are required to be equipped and operated with a catalytic oxidizer control device that has been tested and certified by the Executive Officer to reduce PM and VOC emissions. The District compared the requirements of Rule 1138 to several rules implemented in other parts of California and in other states that are designed to limit PM and/or VOC emissions from commercial charbroilers. Based on its review of analogous regulations implemented in these other areas, the District concludes that Rule 1138 is generally equivalent to those regulations.

Several times over the past 20 years and most recently in 2009, the District considered amending Rule 1138 to regulate PM emissions from under-fired charbroilers, but to date the District has not identified control measures for under-fired charbroilers that are both technologically and economically feasible for implementation in the South Coast. Although three other local agencies have adopted control requirements that apply to under-fired charbroilers (the Bay Area Air Quality Management District, the New York City Department of Environmental Protection, and the City of Aspen, Colorado), no commercially-available control devices for under-fired charbroilers have yet been found to meet these control requirements.⁸⁴ The 2016 AQMP contains a commitment by the District to adopt a control measure in 2018 that requires controls on under-fired charbroilers by 2025. The proposed measure is identified in the Plan as BCM-01.⁸⁵

Based on our evaluation of the information provided in the 2016 AQMP and additional information obtained during our review of the Plan, we agree with the SCAQMD's conclusion

⁸⁴ See *Technical Support Document for the Proposed Approval of South Coast AQMD's Serious Area Plan for the 2006 PM_{2.5} National Ambient Air Quality Standards* (Docket Number EPA-R09-OAR-2017-0490), at pp. 13-14; see also 2016 AQMP, Appendix IV-A, pp. IV-A-186 to IV-A-190.

⁸⁵ See 2016 AQMP, Chapter 4, Table 4-7; Appendix IV-A, pp. IV-A-186 to IV-A-192 (describing BCM-01); and SCAQMD, Governing Board Resolution No. 17-2 (March 3, 2017), at p. 9.

that Rule 1138 and BCM-01 together implement BACM for the control of PM_{2.5} from commercial charbroilers.

Consumer Products

CARB and the SCAQMD both have well-established programs to regulate VOC emissions from consumer products used by both household and institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Specifically, CARB has adopted three regulations that establish VOC and reactivity limits for 129 consumer product categories.⁸⁶ The first regulation (Article 1) covers the categories of antiperspirants and deodorants. The second regulation (Article 2) covers numerous categories and is simply called the "General Consumer Products Regulation." The third regulation (Article 3) covers categories of aerosol coatings. The EPA approved amendments to these regulations into the California SIP on October 17, 2014.⁸⁷

The SCAQMD also regulates certain categories of consumer products, including architectural coatings, wood products, solvents and degreasers, consumer paint thinners, and inks.⁸⁸ For example, South Coast's implementation of Rule 1113 ("Architectural Coatings") establishes emission limits for paints and other architectural coating products that have achieved VOC emission reductions in the South Coast area. The EPA approved Rule 1113, as amended June 3, 2011, into the California SIP on March 26, 2013.⁸⁹

⁸⁶ These regulations are codified in the California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 8.5--Consumer Products; Article 2--Consumer Products.

⁸⁷ 79 FR 62346 (October 17, 2014).

⁸⁸ See, e.g., South Coast Rule 1107, Coating of Metal Parts and Products, approved into the SIP on November 24, 2008 (73 FR 70883); South Coast Rule 1122, Solvent Degreasers, approved into the SIP on February 8, 2006 (71 FR 6350); and South Coast Rule 1130, Graphic Arts, approved into the SIP on July 14, 2015 (80 FR 40915).

⁸⁹ 78 FR 18244 (March 26, 2013).

Based on our evaluation of the information about these programs in the 2016 AQMP, we agree with the State's and District's conclusion that these SIP-approved regulations implement BACM for the control of VOCs from consumer products.

ii. *State Measures for Mobile Sources*

The 2016 AQMP identifies light-duty passenger vehicles, light-duty trucks, medium-duty trucks, medium-heavy-duty diesel trucks, heavy-heavy-duty diesel trucks, and commercial/industrial mobile equipment (construction and mining equipment) as key mobile sources of emissions of PM_{2.5} and PM_{2.5} precursors. CARB describes the mobile source control measures that regulate PM_{2.5} and PM_{2.5} precursor emissions from these sources in Appendix VI-A, Attachment VI-A-3, and Attachment VI-C-1 of the 2016 AQMP.

Under the CAA, the EPA is charged with establishing national emissions limits for mobile sources. States are generally preempted from establishing such limits except for California, which can establish these limits subject to EPA waiver or authorization under CAA section 209 (referred to herein as "waiver measures"). Over the years, the EPA has issued waivers (for on-road vehicles and engines measures) or authorizations (for non-road vehicle and engine measures) for many mobile source regulations adopted by CARB. California attainment and maintenance plans, including the 2016 PM_{2.5} Plan for the South Coast, rely on emissions reductions from implementation of the waiver measures through the use of emissions models such as EMFAC2014.

Historically, the EPA has allowed California to take into account emissions reductions from CARB regulations for which the EPA has issued waiver or authorizations under CAA section 209, notwithstanding the fact that these regulations have not been approved as part of the California SIP. However, in response to the decision by the United States Court of Appeals for

the Ninth Circuit (“Ninth Circuit”) in *Committee for a Better Arvin v. EPA*, the EPA has since approved mobile source regulations for which waiver authorizations have been issued as revisions to the California SIP.⁹⁰

Given the need for significant emissions reductions from mobile sources to meet the NAAQS in California nonattainment areas, CARB has been a leader in the development of stringent control measures for on-road and off-road mobile sources and fuels.⁹¹ CARB’s mobile source program extends beyond regulations that are subject to the waiver or authorization process set forth in CAA section 209 to include standards and other requirements to control emissions from in-use heavy-duty trucks and buses, gasoline and diesel fuel specifications, and many other types of mobile sources. Generally, these regulations have been submitted and approved as revisions to the California SIP.⁹²

In addition to waiver measures, CARB has adopted operational requirements for in-use vehicles, rules that limit the amount of pollutants allowed in transportation fuels, and incentive programs that provide funding to replace or retrofit older, dirtier vehicles and equipment with cleaner technologies.⁹³

The EPA previously determined that California’s mobile source control programs constituted BACM for PM₁₀ purposes in the San Joaquin Valley.⁹⁴ Since then, the State has adopted additional mobile source control measures including the Advanced Clean Cars (ACC) program, heavy-duty vehicle idling rules, revisions to the State’s vehicle inspection and

⁹⁰ See, e.g., 81 FR 39424 (June 16, 2016), 82 FR 14447 (March 21, 2017), and 83 FR 23232 (May 18, 2018). See also *Committee for a Better Arvin*, 786 F.3d 1169 (9th Cir. 2015).

⁹¹ California regulations use the term “off-road” to refer to “nonroad” vehicles and engines.

⁹² See, e.g., the EPA’s approval of standards and other requirements to control emissions from in-use heavy-duty diesel-powered trucks, at 77 FR 20308 (April 4, 2012), revisions to the California on-road reformulated gasoline and diesel fuel regulations at 75 FR 26653 (May 12, 2010), and revisions to the California motor vehicle I/M program at 75 FR 38023 (July 1, 2010).

⁹³ 2016 AQMP, Appendix VI-A, Attachment VI-A-3, pp. VI-A-108-109.

⁹⁴ 69 FR 5412 at 5419 (February 4, 2004).

maintenance (I/M) program, in-use rules for on-road and non-road diesel vehicles, and emissions standards for non-road equipment, farm and cargo handling equipment, and recreational vehicles.⁹⁵

CARB's BACM analysis provides a discussion of the measures adopted and implemented for each of the source categories identified in Table VI-A-6 of the 2016 AQMP that are not under district jurisdiction. We discuss each of these mobile source categories below.

Light and Medium-Duty Vehicles

This category includes light-duty passenger cars, light-duty trucks, and medium-duty trucks. The source category's base year emissions are approximately 119 tpd NO_x, 129 tpd VOC, 1.7 tpd SO₂, 17.1 tpd ammonia, and 8.2 tpd direct PM_{2.5}.⁹⁶

CARB has a long history of adopting programs for reducing emissions from this source category. Light-duty and medium-duty motor vehicles are currently subject to California's "Low-Emission Vehicle III" (LEV III) standards as well as a "Zero Emission Vehicle" (ZEV) requirement. The LEV III standards are consistent, or harmonized, with the subsequently adopted national Tier 3 standards for the same vehicles. California's ZEV program, however, does not have a national counterpart and results in additional emissions reductions as it phases in a requirement that 15% of new light-duty vehicle sales consist of ZEV or partial ZEV.⁹⁷ Light and medium-duty vehicles are also regulated under California's ACC program. We approved the ACC into the SIP on June 16, 2016.⁹⁸ Taken as a whole, California's standards for light and medium-duty vehicles are more stringent than the federal standards.

⁹⁵ 2016 AQMP, Appendix VI-A, Attachment VI-A-3, p. VI-A-103.

⁹⁶ 2016 AQMP, Appendix III, Attachment A.

⁹⁷ 78 FR 2112 at 2119 (January 9, 2013).

⁹⁸ 81 FR 39424 (June 16, 2016).

California has also adopted regulations for gasoline fuel (California Reformulated Gasoline or “CaRFG”) that reduce emissions from light-duty and medium-duty vehicles. The EPA approved the CaRFG regulations into the California SIP on May 12, 2010.⁹⁹ In our action proposing to approve CaRFG3, we noted that the EPA had previously determined that emissions reductions from CaRFG3 would be equal to or greater than the emissions reductions from the corresponding federal RFG program.¹⁰⁰

Heavy-Duty Vehicles

This category includes heavy-heavy-duty diesel vehicles, heavy-duty gas and diesel trucks, heavy-duty gas and diesel urban buses, school buses and motor homes. The emissions from this category are approximately 195 tpd NO_x, 6.23 tpd direct PM_{2.5}, 12.47 tpd VOC, 0.29 tpd, SO₂, and 0.97 tpd ammonia.¹⁰¹

California has the most stringent heavy-duty vehicle emissions control measures in the nation, including engine standards for diesel and gasoline vehicles, idling requirements, certification procedures, on-board diagnostic requirements, and verification measures for emissions control devices. Many of these control measures are subject to the CAA waiver process and have also been submitted for inclusion in and approved into the SIP.¹⁰²

California has also adopted many in-use requirements to help reduce emissions from the vehicles already on the road, which may remain in use for many years. Among the most recently adopted in-use requirements are the Truck and Bus Regulation and Drayage Truck Regulation (often referred to as the “Cleaner In-Use Heavy-Duty Trucks Measure”), which became effective

⁹⁹ 75 FR 26653 (May 12, 2010).

¹⁰⁰ 74 FR 33196 at 33198 (July 10, 2009).

¹⁰¹ 2016 AQMP, Appendix III, Attachment A.

¹⁰² See 81 FR 39424 (June 16, 2016), 82 FR 14446 (March 21, 2017), and 83 FR 23232 (May 18, 2018).

in 2011 and the EPA approved into the SIP in 2012.¹⁰³ The Truck and Bus Regulation and Drayage Truck Regulation are designed to reduce emissions of diesel PM, NO_x, and other pollutants from in-use trucks and buses and establish, among other things, phased-in PM control requirements from 2014 through 2023 based on truck engine model year. These and other regulations applicable to heavy-duty diesel trucks (HDDTs) will continue to reduce emissions of diesel PM and NO_x through the RFP and attainment planning years. For instance, model year (MY) 1994 and 1995 HDDT engines must be upgraded to meet the 2010 model year truck engine emissions standards by 2016, and MY 1996-1999 engines must be upgraded by January 1, 2020.¹⁰⁴ The emissions reductions from these rules represent a large portion of the NO_x emissions reductions upon which the Plan's RFP and attainment demonstration rely.

Finally, California has adopted regulations for diesel fuel that further reduce emissions from heavy-duty trucks. The EPA approved these diesel fuel regulations into the California SIP on May 12, 2010.¹⁰⁵

Off-Road Vehicles and Engines

This category includes off-road compression ignition (diesel) engines and equipment, small spark ignition (gasoline) off-road engines and equipment less than 25 horsepower (hp) (*e.g.*, lawn and garden equipment), off-road large gasoline engines and equipment greater than 25 hp (*e.g.*, forklifts, portable generators), and airport ground service equipment. The emissions

¹⁰³ 77 FR 20308, April 4, 2012.

¹⁰⁴ Title 13, California Code of Regulations, Section 2025 ("Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles"), paragraphs (e), (f), and (g), effective December 14, 2011. *See also* the EPA's final rule approving CARB's Truck and Bus Rule. 77 FR 20308 at 20309-20310 (April 4, 2012).

¹⁰⁵ *See* 75 FR 26653.

from this category total approximately 66 tpd NO_x, 4 tpd direct PM_{2.5}, 51.5 tpd VOC, 0.07 tpd SO₂, and 0.09 tpd ammonia.¹⁰⁶

As it has done for the on-road categories discussed above, CARB has adopted stringent new emissions standards subject to EPA authorization under CAA section 209(e) and in-use measures or requirements for this source category (*e.g.*, incentives for early introduction of cleaner engines and equipment and requirements to limit vehicle idling). CARB has been regulating off-road equipment since the 1990s, and its new engine standards for off-road vehicles and engines are generally as stringent as the corresponding federal standards. For larger off-road equipment, which can have a slow turnover rate, CARB adopted an in-use off-road regulation in 2007 that requires owners of off-road equipment in the construction and other industries to retrofit or replace older engines/equipment with newer, cleaner models. The off-road regulation imposes idling limitations.¹⁰⁷ CARB's off-road emissions control program also includes comprehensive in-use requirements for legacy fleets.¹⁰⁸

Title 13, Section 2449 of the California Code of Regulation (CCR), "Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Regulation)" was adopted by CARB in July 2007 and requires off-road diesel vehicle fleets to reduce emissions by meeting NO_x and PM fleet average standards. A provision of the Off-Road Regulation (Title 13, CCR, Section 2449.2) allows air districts to opt-in and requires the largest fleets to apply for funding to meet more stringent NO_x targets. In 2008, SCAQMD developed the Surplus Off-Road Opt-In for NO_x (SOON) Program. The SOON Program is designed to achieve additional NO_x reductions beyond those that would be obtained from the State's In-Use Off-Road Vehicle Regulation. The program

¹⁰⁶ 2016 AQMP, Appendix III, Attachment A.

¹⁰⁷ *Id.*

¹⁰⁸ 2016 AQMP, Appendix VI-A, p. VI-A-104, also Appendix VI-C, pp. VI-C-21 to VI-C-22.

provides funding to large fleets for the purchase of commercially-available low-emission heavy-duty engines to achieve near-term reduction of NO_x emissions from in-use off-road diesel vehicles. Fleets that participate in the SOON Program can apply for funding for NO_x exhaust retrofits, repowers or equipment replacements. We approved the SCAQMD SOON program into the SIP on November 21, 2016.¹⁰⁹

iii. Local Jurisdiction Transportation Control Measures

Transportation control measures (TCMs) are, in general, measures designed to reduce emissions from on-road motor vehicles through reductions in vehicle miles traveled (VMT) or traffic congestion. TCMs can reduce PM_{2.5} emissions in both the on-road motor vehicle exhaust and paved road dust source categories by reducing VMT and vehicle trips. They can also reduce vehicle exhaust emissions by relieving congestion. EPA guidance states that where mobile sources contribute significantly to PM_{2.5} violations, “the state must, at a minimum, address the transportation control measures listed in CAA section 108(f) to determine whether such measures are achievable in the area considering energy, environmental and economic impacts and other costs.”¹¹⁰

Appendix IV-C, “Regional Transportation Strategy and Control Measures,” contains SCAG’s BACM analysis for TCMs. Consistent with EPA guidance, SCAG addressed the TCMs listed in CAA section 108(f) following a four-step process. SCAG first reviewed ongoing implementation of TCMs in the South Coast air basin. SCAG also reviewed TCMs implemented in all other Moderate and Serious PM_{2.5} and PM₁₀ nonattainment areas throughout the country (e.g., Salt Lake City, Utah; Fairbanks, Alaska; and San Joaquin Valley, California) and

¹⁰⁹ 81 FR 83154.

¹¹⁰ Addendum at 42013.

compared them to the TCMs being implemented in the South Coast.¹¹¹ SCAG then reviewed the TCMs not being implemented in the SCAG region and provided a reasoned justification for any TCMs not implemented in the SCAG region.¹¹² Finally, SCAG concluded that its TCM program provides a BACM level of control.

TCMs in the South Coast air basin fall into three main categories: 1) transit, intermodal facilities, and nonmotorized transportation mode facilities (*i.e.*, bike/pedestrian facilities), 2) high occupancy vehicle (HOV) lanes, high occupancy toll (HOT) lanes, and pricing alternatives, and 3) information-based TCM strategies. Between 2012 and 2020, SCAG estimates a 23% increase in HOV, HOT and toll lanes, a 7.4% increase in operation miles of regular transit buses, a 10% increase in operation miles of rapid transit and express buses, a 38.8% increase in operation miles of transit rail, and a 40% increase in Class 1-4 bikeway miles.¹¹³ TCM funding is guaranteed through the timeframe of the 2016 PM_{2.5} Plan and beyond, with transportation sales tax measures through 2039 and 2040 in the four counties in the South Coast air basin.¹¹⁴ The county-specific sales tax revenue provides a guaranteed funding source for more than 50% of the TCM projects.¹¹⁵ In addition, SCAG has a standardized program for selecting cost-effective control measures.

3. The EPA's Evaluation and Conclusion

We have reviewed the District's determination in the 2016 AQMP that its stationary and area source control measures represent BACM for PM_{2.5} and PM_{2.5} precursors. In our review, we also considered our previous evaluations of the District's rules in connection with our approval

¹¹¹ See 2016 AQMP, Appendix IV-C, pp. IV-C-38 and IV-C-39, Table 8.

¹¹² See 2016 AQMP, Appendix IV-C, pp. IV-C-42 to IV-C-50, Table 9.

¹¹³ See 2016 AQMP, Appendix IV-C, p. IV-C-34.

¹¹⁴ *Id.*

¹¹⁵ See 2016 AQMP, Appendix IV-C, p. IV-C-36.

of the SCAQMD's RACT SIP demonstration for the 2008 ozone NAAQS.¹¹⁶ Based on this review, we believe the District's rules provide for the implementation of BACM for stationary and area sources of PM_{2.5} and PM_{2.5} precursors.

With respect to mobile sources, we recognize that CARB's current program addresses the full range of mobile sources in the South Coast through regulatory programs for both new and in-use vehicles. With respect to transportation controls, we note that SCAG has adopted a program to fund cost-effective TCMs. Overall, we believe that the programs developed and administered by CARB and SCAG provide for the implementation of BACM for PM_{2.5} and PM_{2.5} precursors in the South Coast nonattainment area.

For these reasons, we propose to find that the 2016 PM_{2.5} Plan provides for the implementation of BACM for all sources of direct PM_{2.5} and PM_{2.5} precursors as expeditiously as practicable, for purposes of the 2006 PM_{2.5} NAAQS in the South Coast area, in accordance with the requirements of CAA section 189(b)(1)(B) and 40 CFR 51.1010.

D. Attainment Demonstration and Modeling

Section 189(b)(1)(A) of the CAA requires that each Serious area plan include a demonstration (including air quality modeling) that the plan provides for attainment of the PM_{2.5} NAAQS by the applicable attainment date or, where a state is seeking an extension of the attainment date under section 188(e), a demonstration that attainment by that date is impracticable and that the plan provides for attainment by the most expeditious alternative date practicable. We discuss below our evaluation of the modeling approach in the Plan, and the control strategy in the Plan for attaining the 24-hour PM_{2.5} NAAQS by the most expeditious date practicable.

¹¹⁶ 82 FR 43850 (September 20, 2017).

Evaluation of Air Quality Modeling Approach and Results

The EPA's PM_{2.5} modeling guidance¹¹⁷ ("Modeling Guidance" and "Modeling Guidance Update") recommends that a photochemical model, such as CAMx¹¹⁸ or CMAQ, be used to simulate a base case, with meteorological and emissions inputs reflecting a base case year, to replicate concentrations monitored in that year. The model application to the base case year undergoes a performance evaluation to ensure that it satisfactorily agrees with concentrations monitored in that year. The model may then be used to simulate emissions occurring in other years required for a plan, namely the base year (which may differ from the base case year) and future year.¹¹⁹ The modeled response to the emission changes between those years is used to calculate Relative Response Factors (RRFs), which are applied to the design value in the base year to estimate the projected design value in the future year for comparison against the NAAQS. Separate RRFs are estimated for each chemical species component of PM_{2.5}, and for each quarter of the year, to reflect their differing responses to seasonal meteorological conditions and emissions. Because each chemical species is handled separately, before applying an RRF, the base year design value must be speciated using available chemical species measurements, that is,

¹¹⁷ "Draft Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze" Memorandum from Richard Wayland, Air Quality Assessment Division, OAQPS, EPA to Regional Air Program Managers, EPA, December 3, 2014 ("Modeling Guidance"), "Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze," EPA-454/B-07-002, April 2007 ("Modeling Guidance"); and "Update to the 24 Hour PM_{2.5} NAAQS Modeled Attainment Test," Memorandum from Tyler Fox, Air Quality Modeling Group, OAQPS, EPA to Regional Air Program Managers, EPA, June 28, 2011 ("Modeling Guidance Update").

¹¹⁸ CAMx is a multi-scale photochemical modeling system for gas and particulate air pollution.

¹¹⁹ In this section, we use the terms "base case," "base year" or "baseline," and "future year" as described in section 2.3 of the EPA's Modeling Guidance. The "base case" modeling simulates measured concentrations for a given time period, using emissions and meteorology for that same year. The modeling "base year" (which can be the same as the base case year) is the emissions starting point for the plan and for projections to the future year, both of which are modeled for the attainment demonstration. *See* Modeling Guidance at pp. 33-34. Note that CARB sometimes uses "base year" synonymously with "base case" and "reference year" instead of "base year."

each day's measured PM_{2.5} design value must be split into its species components. The Modeling Guidance provides additional detail on the recommended approach.¹²⁰

24-Hour PM_{2.5} Modeling Approach

The CMAQ simulations were conducted for each day in the 2012 base year.¹²¹ A set of species-specific RRFs was generated for the 2019 future year simulation from the top 10% of modeled PM_{2.5} days. RRFs were generated for the ammonium ion, nitrate ion, sulfate ion, organic carbon, elemental carbon, sea salt, and a combined grouping of other primary PM_{2.5} material. Future year concentrations of each of the seven component species were calculated by applying the model-generated quarterly RRFs to the speciated 24-hour PM_{2.5} data for each of the five years used in the design value calculation.¹²² The speciation fractions used to generate 24-hour speciated PM_{2.5} values were determined from the “high” days.¹²³ A weighted average of the resulting future year 98th percentile concentrations for each of the five years was used to calculate future design values for the attainment demonstration.¹²⁴ Future year PM_{2.5} 24-hour average design values were projected for 2019, the Serious area attainment deadline for the 2006 standard of 35 µg/m³.

Future Air Quality

A simulation of 2019 baseline emissions (no additional controls) was conducted to assess future 24-hour PM_{2.5} levels in the South Coast air basin. The simulation used the projected

¹²⁰ Modeling Guidance Update at 43 ff.

¹²¹ CMAQ Version 5.0.2

¹²² The design value is based on a weighted average of data from 2010 to 2014.

¹²³ Particle bound water was determined using the EPA's regression model approximation of the AerosolInorganics Model (AIM) based on simulated concentrations of the ammonium, nitrate and sulfate ions (EPA, 2006). A blank mass of 0.5 µg/m³ was added to each base and future year simulation.

¹²⁴ The 32 days in each year (8 per quarter) were then reranked based on the sum of all predicted PM species to establish a new 98th percentile concentration. The 98th percentile value was determined based on the FRM sampling frequency. All the SASS sites except Fontana have a daily FRM sampling, which gives the 8th highest day as the 98th percentile. Fontana has every-three-day sampling, thus the 3rd highest day becomes the 98th percentile.

emissions from 2012, which reflect all adopted control measures that will be implemented by December 31, 2019. Simulation of the 2019 baseline emissions indicates that the South Coast air basin will attain the federal 24-hour PM_{2.5} standard in 2019 without additional controls. The projected 2019 design value is 32.1 µg/m³ at Mira Loma, the highest site in the South Coast air basin.

Table 2 shows future 24-hour PM_{2.5} air quality projections at the South Coast air basin design site (Mira Loma) and the four other PM_{2.5} monitoring sites equipped with comprehensive particulate species characterization. Shown in the table are the base year design values for 2012 along with projections for 2019. All of the sites are projected to meet the 24-hour PM_{2.5} standard by 2019 without additional reductions beyond already adopted control measures.

Table 2. Future 24-hour PM_{2.5} Air Quality Projections at Selected Monitoring Sites in the South Coast Air Basin

Monitoring site location	24-hour PM_{2.5} 98th percentile concentration total mass for Base Year, 2012 (µg/m³)	24-hour PM_{2.5} 98th percentile concentration total mass projected for 2019 (µg/m³)
Anaheim	25.82	23.46
Fontana	32.74	28.01
Los Angeles	30.52	27.60
Mira Loma	36.52	31.36
Rubidoux	33.16	28.27

The EPA's regulations require that monitoring data for comparison to the NAAQS be collected using specific equipment and procedures to ensure accuracy and reliability.¹²⁵ For each NAAQS, the default monitoring equipment and the required procedures for operating it are termed the Federal Reference Method (FRM); an alternative approach, termed a Federal Equivalent Method may also be used if it is demonstrated to give results comparable to an FRM monitor.

¹²⁵ 40 CFR parts 53 and 58.

Evaluation of Control Strategy

The attainment control strategy in the 2016 PM_{2.5} Plan consists of state and district baseline measures that continue to achieve emission reductions between the Plan's base year of 2012 and the attainment year of 2019. With respect to baseline measures for stationary and area sources, the District identified the District rules and their projected emission levels in Appendix VI, section VI-C of the 2016 AQMP and described each of the District measures that contribute to RFP and attainment.¹²⁶ The District control measures listed in this section of the Plan have been approved into the California SIP.¹²⁷

With respect to mobile sources, the State identified the source categories and described the EMFAC2014 emission factor model used to project their future emission levels in Chapter 3 and Appendix III of the 2016 AQMP.¹²⁸

Table 3 below summarizes the emission reductions needed in the South Coast to attain the 2006 24-hour PM_{2.5} NAAQS by the end of 2019.

Table 3. Summary of Direct PM_{2.5} and Precursor Emission Reductions Needed for the 2006 PM_{2.5} NAAQS Attainment Demonstration

		2006 24-hour Standard Attainment by 2019 (tpd annual average)				
		PM _{2.5}	NO _x	SO ₂	VOC	NH ₃
A	2012 emissions inventory	66	540	18	470	81
B	2019 baseline emissions inventory	64	353	17	376	74
C	2019 controlled emissions inventory	64	353	17	376	74
D	Total emission reductions needed by attainment year (A - C)	2	187	1	94	7

Source: 2016 PM_{2.5} Plan, Chapter 3, and Appendix VI, Table VI-C-5.

¹²⁶ See 2016 AQMP, Appendix VI, Table VI-C-4, p. VI-C-8.

¹²⁷ See EPA Region 9's website for information on district control measures that have been approved into the California SIP, available at: <https://www.epa.gov/sips-ca/epa-approved-south-coast-air-district-regulations-california-sip>.

¹²⁸ 2016 AQMP, pages III-2-73 and Attachment D-1 to Appendix III.

The Plan identifies several district and state measures that will achieve emission reductions and contribute to expeditious attainment of the 2006 PM_{2.5} NAAQS. These are described in the sections of this proposed rulemaking on BACM and RFP.

In sum, the attainment demonstration in the 2016 PM_{2.5} Plan relies on numerous state and district baseline regulations that collectively are projected to achieve emission reductions sufficient for the South Coast area to attain the 2006 24-hour PM_{2.5} standard by the end of 2019.

EPA's Evaluation and Proposed Action

As discussed above, the 2016 PM_{2.5} Plan's air quality modeling demonstrates that the South Coast will attain the 2006 24-hour PM_{2.5} standard of 35 µg/m³ by December 31, 2019. This demonstration is based on expeditious implementation of the state's and district's BACM control strategy for stationary, area, and mobile sources in the 2016 PM_{2.5} Plan and ongoing reductions from state and local control measures already approved into the SIP. Based on our evaluation, we propose to determine that the 2016 PM_{2.5} Plan provides for attainment of the 2006 24-hour PM_{2.5} standards by the most expeditious date practicable, consistent with the requirements of CAA section 189(b)(1)(A) and 40 CFR 51.1011(b).

E. Reasonable Further Progress and Quantitative Milestones

1. Requirements for Reasonable Further Progress and Quantitative Milestones

Section 172(c)(2) of the Act states that all nonattainment area plans shall require RFP. In addition, CAA section 189(c) requires that all PM_{2.5} nonattainment area SIPs contain quantitative milestones to be achieved every three years until the area is redesignated to attainment and which demonstrate RFP, as defined in CAA section 171(1). Section 171(1) of the Act defines RFP as the annual incremental reductions in emissions of the relevant air pollutant as are required by part D, title I of the Act or as may reasonably be required by the Administrator for the purpose of

ensuring attainment of the NAAQS by the applicable date. Neither subpart 1 nor subpart 4 of part D, title I of the Act requires that a set percentage of emissions reductions be achieved in any given year for purposes of satisfying the RFP requirement.

RFP has historically been met by showing annual incremental emissions reductions sufficient generally to maintain at least linear progress toward attainment by the applicable deadline.¹²⁹ As discussed in EPA guidance in the Addendum, requiring linear progress in reductions of direct PM_{2.5} and any individual precursor in a PM_{2.5} plan may be appropriate in situations where:

- the pollutant is emitted by a large number and range of sources,
- the relationship between any individual source or source category and overall air quality is not well known,
- a chemical transformation is involved (*e.g.*, secondary particulate significantly contributes to PM_{2.5} levels over the standard), and/or
- the emission reductions necessary to attain the PM_{2.5} standard are inventory-wide.¹³⁰

The Addendum states that requiring linear progress may be less appropriate in other situations, such as:

- where there are a limited number of sources of direct PM_{2.5} or a precursor,
- where the relationships between individual sources and air quality are relatively well defined, and/or
- where the emission control systems utilized (*e.g.*, at major point sources) will result in swift and dramatic emission reductions.

¹²⁹ Addendum at 42015.

¹³⁰ *Id.*

In nonattainment areas characterized by any of these latter conditions, RFP may be better represented as step-wise progress as controls are implemented and achieve significant reductions soon thereafter. For example, if an area's nonattainment problem can be attributed to a few major sources, EPA guidance states that RFP may be met by "adherence to an ambitious compliance schedule" that is likely to periodically yield significant reductions of direct PM_{2.5} or a PM_{2.5} precursor.¹³¹

Plans for PM_{2.5} nonattainment areas should include detailed schedules for compliance with emission control measures in the area and provide corresponding annual emission reductions to be achieved by each milestone in the schedule.¹³² In reviewing an attainment plan under subpart 4, the EPA considers whether the annual incremental emissions reductions to be achieved are reasonable in light of the statutory objective of timely attainment. Although early implementation of the most cost-effective control measures is often appropriate, states should consider both cost-effectiveness and pollution reduction effectiveness when developing implementation schedules for control measures and may implement measures that are more effective at reducing PM_{2.5} earlier to provide greater public health benefits.¹³³

The PM_{2.5} SIP Requirements Rule establishes specific regulatory requirements for purposes of satisfying the Act's RFP requirements and provides related guidance in the preamble to the rule. Specifically, under the PM_{2.5} SIP Requirements Rule, each PM_{2.5} attainment plan must contain an RFP plan that includes, at minimum, the following four components: 1) an implementation schedule for control measures; 2) RFP projected emissions for direct PM_{2.5} and all PM_{2.5} plan precursors for each applicable milestone year, based on the anticipated control

¹³¹ *Id.*

¹³² *Id.* at 42016.

¹³³ *Id.*

measure implementation schedule; 3) a demonstration that the control strategy and implementation schedule will achieve reasonable progress toward attainment between the base year and the attainment year; and 4) a demonstration that by the end of the calendar year for each milestone date for the area, pollutant emissions will be at levels that reflect either generally linear progress or stepwise progress in reducing emissions on an annual basis between the base year and the attainment year.¹³⁴

The preamble to the PM_{2.5} SIP Requirements Rule provides that emissions from one or more PM_{2.5} plan precursors may increase over the attainment planning period, provided the state demonstrates that reductions of direct PM_{2.5} combined with the aggregate reductions of PM_{2.5} plan precursors support expeditious attainment of the applicable PM_{2.5} NAAQS. This approach recognizes the fact that different precursors have different impacts on PM_{2.5} concentrations depending upon the atmospheric chemistry specific to each area.¹³⁵

Section 189(c) of the Act requires that PM_{2.5} attainment plans include quantitative milestones that demonstrate RFP. The purpose of the quantitative milestones is to allow periodic evaluation of the area's progress towards attainment of the PM_{2.5} NAAQS consistent with RFP requirements. Because RFP is an annual emission reduction requirement and the quantitative milestones are to be achieved every three years, when a state demonstrates compliance with the quantitative milestone requirement, it should also demonstrate that RFP has been achieved during each of the relevant three years. Quantitative milestones should provide an objective means to evaluate progress toward attainment meaningfully, *e.g.*, through imposition of emissions controls in the attainment plan and the requirement to quantify those required emissions reductions. The CAA also requires states to submit, within 90 days after each

¹³⁴ 40 CFR 51.1012(a).

¹³⁵ 81 FR 58010 at 58057 (August 24, 2016).

milestone date, milestone reports that include technical support sufficient to document completion statistics for appropriate milestones, *e.g.*, calculations and any assumptions made concerning emission reductions to date.¹³⁶

The CAA does not specify the starting point for counting the three-year periods for quantitative milestones under CAA section 189(c). In the General Preamble and Addendum, the EPA interpreted the CAA to require that the starting point for the first three-year period be the due date for the Moderate area plan submission.¹³⁷ In keeping with this historical approach, the EPA established December 31, 2014, as the starting point for the first 3-year period under CAA section 189(c) for the 2006 PM_{2.5} standards in the South Coast. This date was the due date established in the EPA's June 2, 2014 Deadline and Classification Rule for the State's submission of any additional attainment-related SIP elements necessary to satisfy the subpart 4 Moderate area requirements for the 2006 PM_{2.5} NAAQS in the South Coast area.¹³⁸ Thus, December 31, 2017 and December 31, 2020, are the milestone dates that the Serious area plan must address, at minimum. The EPA believes that establishing December 31, 2017, as the first quantitative milestone date is an appropriate means for implementing the requirements of subpart 4 for the 2006 PM_{2.5} NAAQS.

The PM_{2.5} SIP Requirements Rule also requires that Serious area attainment plans contain one additional quantitative milestone to be met in the three-year period following the Serious

¹³⁶ Addendum at 42016, 42017.

¹³⁷ General Preamble at 13539, Addendum at 42016.

¹³⁸ 79 FR 31566 (June 2, 2014) (final rule establishing subpart 4 moderate area classifications and deadline for related SIP submissions) ("Classification and Deadline Rule"). Although the Classification and Deadline Rule did not affect any action that the EPA had previously taken under CAA section 110(k) on a SIP for a PM_{2.5} nonattainment area, the EPA noted that states may need to submit additional SIP elements to fully comply with the applicable requirements of subpart 4, even for areas with previously approved PM_{2.5} attainment plans, and that the deadline for any such additional plan submissions was December 31, 2014. *Id.* at 31569.

area attainment date.¹³⁹ If the area fails to attain, this additional milestone provides the EPA with the tools necessary to monitor the area's continued progress toward attainment while the state develops a new attainment plan under CAA section 189(d).

2. RFP Plan and Quantitative Milestones in the 2016 PM_{2.5} Plan

The RFP plan and quantitative milestones are discussed in Appendix VI, section VI-C (pp. VI-C-5 to VI-C-8) of the 2016 AQMP. The Plan estimates that emissions of direct PM_{2.5}, NO_x, VOC, SO₂ and ammonia will generally decline from the 2012 base year to 2019 and states that emissions of each of these pollutants will remain below the levels needed to show “generally linear progress” from 2012 to 2019, the year that the Plan projects to be the earliest practicable attainment date for the 2006 PM_{2.5} NAAQS.¹⁴⁰ The Plan's emissions inventory shows that direct PM_{2.5}, NO_x, VOC, SO₂ and ammonia are emitted by a large number and range of sources in the South Coast and that the emission reductions needed for each of these pollutants are inventory wide.¹⁴¹ Table VI-C-4 of the 2016 AQMP contains an implementation schedule for District control measures and Table VI-C-3 of the 2016 AQMP (reproduced in Table 4 below) contains RFP projected emissions for each quantitative milestone year and the attainment year. Based on these analyses, the District concludes that its adopted control strategy will achieve, for each pollutant, projected emission levels at or below the RFP, quantitative milestone, and attainment year target emission levels (*see* Table 5 below).¹⁴²

¹³⁹ 40 CFR 51.1013(a)(4).

¹⁴⁰ 2016 AQMP, Appendix VI-C, p. VI-C-7, Tables VI-C-3 and VI-C-3A.

¹⁴¹ 2016 AQMP, Chapter 4 and Appendices IV-A, VI-B and VI-C.

¹⁴² 2016 AQMP, Appendix VI-C, p. VI-C-6.

Table 4. 24-Hour PM_{2.5} Baseline Emissions for Base and Milestone Years (annual average tpd)

Pollutant	2012	2017 (Quantitative Milestone)	2019 (Attainment Deadline)	2020 (Quantitative Milestone)
PM_{2.5}	66.4	63.8	63.9	63.9
NO_x	540	398	353	330
SO₂	18.4	17.1	16.6	16.7
VOC	470	392	376	370
NH₃	81.1	75.5	74.0	73.3

Source: 2016 AQMP, Appendix VI-C, Table VI-C-3.

Table 5. Summary of 24-hour PM_{2.5} RFP Calculations (annual average tpd)

Row	Calculation Step	PM_{2.5}	NO_x	SO₂	VOC	NH₃
1	2012 base year emissions	66.4	540	18.4	470	81.1
2	Annual percent change needed to show linear progress (%)	0.55	4.9	1.4	2.9	1.2
3	2017 Target Needed to show linear progress (tpd)	64.6	406	17.1	403	76.0
4	2017 Baseline emissions (tpd)	63.8	398	17.1	392	75.5
5	Projected shortfall (tpd)	0	0	0	0	0
6	Surplus in 2017 (tpd)	0.85	8.6	0.05	10.4	0.48
7	Emissions Equivalent to 1 Year's Worth of RFP	0.36	26.7	0.25	13.5	1.0
8	2019 Baseline Emissions (tpd)	63.9	353	16.6	376	74.0

Source: 2016 AQMP, Appendix VI-C, Table VI-C-3A.

The 2016 PM_{2.5} Plan documents the State's conclusion that all BACM and BACT for these pollutants are being implemented as expeditiously as practicable and identifies projected levels of direct PM_{2.5}, NO_x, VOC, ammonia, and SO₂ emissions in 2017 and 2019 that reflect full implementation of the state, district, and SCAG's BACM/BACT control strategy for these pollutants.¹⁴³ The BACM control strategy that provides the basis for these emissions projections is described in Chapter 4, Appendix IV, and Appendix VI of the 2016 AQMP.

¹⁴³ 2016 AQMP, Appendix VI-C, pp. VI-C-5 to VI-C-11; *see also* evaluation of BACM/BACT in section V.C of this proposed rule.

Direct PM_{2.5}

The District has several stationary and area source rules that are projected to contribute to RFP and attainment of the PM_{2.5} standards.¹⁴⁴ For example, Rule 444 (Open Burning) achieved reductions of direct PM_{2.5} from the base year of 2012 to the 2017 RFP year. In addition, Rule 445 (Wood-Burning Devices) was amended in 2013 by lowering the mandatory winter burning curtailment program threshold for residential wood burning and extending the curtailment to the entire South Coast air basin, thereby further limiting emissions from one of the largest combustion sources of direct PM_{2.5} in the South Coast nonattainment area.¹⁴⁵ These rule amendments provide part of the incremental emission reductions of direct PM_{2.5} from the 2012 base year to the 2017 RFP milestone year.¹⁴⁶ Measures to control sources of direct PM_{2.5} are also presented in the Plan's BACM analyses and reflected in the Plan's baseline emission projections.

The Plan highlights on-road and other mobile source control measures as the primary means for achieving direct PM_{2.5} emission reductions. CARB's implementation of the Truck and Bus Regulation (referred to in the Plan as the "On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation") achieved PM_{2.5} emissions reductions beginning in 2012.¹⁴⁷ Lighter trucks and buses were required to replace 1995 and older engines with a 2010 MY by 2015. The 2010 MY engines include particulate filters. CARB's LEV II program includes particulate matter emissions limits by MY for 2016, and the LEV III program has stricter emission limits for 2017 and beyond. For off-road vehicles, CARB adopted the In-Use Off Road Diesel-Fueled Fleets Regulation ("Off-Road Regulation") in 2007. The Off-Road Regulation requires owners to

¹⁴⁴ 2016 AQMP, Appendix VI-A, p. VI-A-34.

¹⁴⁵ 2016 AQMP, Appendix III; *see also* 78 FR 59249 (September 26, 2013).

¹⁴⁶ 2016 AQMP, Appendix VI-C, p. VI-C-1, Table VI-C-4.

¹⁴⁷ The State's quantitative milestone report for the 2017 milestone indicates that the requirement for heavier trucks to install diesel particulate filters was fully implemented by 2016. *See* SCAQMD, "2017 Quantitative Milestone Report for 2006 24-hour PM_{2.5} National Ambient Air Quality Standard," March 2018 ("2017 QM Report"), p. 11.

replace older vehicles or engines with newer, cleaner models to either (1) retire older vehicles or reduce their use, or (2) to apply retrofit exhaust controls. Off-road fleets are required to meet increasingly strict fleet average indices over time.¹⁴⁸ These indices reflect a fleet's overall emissions rate of PM and NO_x for model year and horsepower combinations. Fleets were also banned from adding Tier 0 off-road engines as of January 1, 2014.¹⁴⁹ CARB implemented a similar ban on Tier 1 engines between January 1, 2014 (large fleets) and January 1, 2016 (small fleets).

Nitrogen oxides

The District regulates numerous NO_x emission sources such as residential space and water heating devices, stationary internal combustion engines, and various sizes of boilers, steam generators, and process heaters used in industrial settings. The 2016 AQMP identifies the following South Coast regulations as measures that achieve ongoing NO_x reductions with compliance dates during the RFP and attainment years of the Plan: Rule 1111 (Reductions of NO_x from Natural Gas-Fired, Fan-Type Central Furnaces), Rule 1110.2 (Emissions from Gaseous- and Liquid-Fueled Engines), Rule 1121 (Control of Nitrogen Oxides from Residential-Type, Natural Gas-Fired Water Heaters), Rule 1146 (Emission of Oxides of Nitrogen from Industrial, Institutional, Commercial Boilers, Steam Generators, and Process Heaters), Rule 1146.1 (Emission of Oxides of Nitrogen from Small Industrial, Institutional, Commercial Boilers, Steam Generators, and Process Heaters), Rule 1146.2 (Emission of Oxides of Nitrogen

¹⁴⁸ A fleet average index is an indicator of a fleet's overall emissions rate of particulate matter and NO_x based on the horsepower and model year of each engine in the fleet.

¹⁴⁹ Tier 0 engines meet 1995 to 1999 emission standards, depending on engine size and horsepower. *See* https://www.assocpower.com/eqdata/tech/US-EPA-Tier-Chart_1995-2004.php.

from Large Water Heaters and Small Boilers and Process Heaters), and Rule 1147 (NO_x Reductions from Miscellaneous Sources).^{150,151}

For on-road and non-road mobile sources, which represent the largest sources of NO_x emissions in the nonattainment area, the 2016 AQMP lists numerous CARB regulations and discusses the key regulations that limit emissions of direct PM_{2.5} as well as NO_x, VOC, SO₂ and ammonia from these sources.¹⁵² For example, the regulations that apply to the three largest sources of NO_x in the South Coast – heavy-duty diesel trucks, light- and medium-duty passenger vehicles, and off-road equipment – are discussed in the 2016 AQMP at Appendix VI-C, Attachment VI-C-1, “California Existing Mobile Source Control Program,” and CARB’s emission projections for these sources are presented in the Plan’s emissions inventory.¹⁵³ The Plan also shows that NO_x emission levels in each milestone year and the attainment year are projected to be well below the levels needed to show generally linear progress toward attainment.

The Truck and Bus Regulation and Drayage Truck Regulation became effective in 2011 and have rolling compliance deadlines based on truck engine model year. These and other regulations applicable to heavy-duty diesel trucks will continue to reduce emissions of diesel particulate matter and NO_x through the RFP and attainment planning years.¹⁵⁴ For example, MY 1994 and 1995 heavy-duty diesel truck engines were required to be upgraded to meet the 2010 MY truck engine emission standards by 2016, and MY 1996-1999 engines must be upgraded by

¹⁵⁰ 2016 AQMP, Appendix VI-C, Table VI-C-4 and p. VI-C-8.

¹⁵¹ Rule 1111 was mistakenly listed as Rule 1110 in the 2016 AQMP, Appendix VI, Table VI-C-4. See 2017 QM Report at p. 6, footnote 1.

¹⁵² 2016 AQMP, Appendix IV-C, Attachment VI-C-1.

¹⁵³ 2016 AQMP, Appendix IV-C, Attachment VI-C-1, pp. VI-C-19-21.

¹⁵⁴ 2016 AQMP, Appendix IV-C, p. VI-C-20.

January 1, 2020.¹⁵⁵ The emission reductions from these rules represent the largest portion of the NO_x emission reductions upon which the 2016 PM_{2.5} Plan's attainment and RFP demonstrations rely.¹⁵⁶ Emission reductions between 2012 and 2017 were achieved through the requirements for particulate filters and cleaner engine standards.

California also has the authority under the CAA to regulate light- and medium-duty vehicle engines. A key control program for these vehicles is the ACC program.¹⁵⁷ The ACC program implements a variety of regulations including the LEV III program, with criteria pollutant emission limits for non-methane organic gases (NMOG)¹⁵⁸ and NO_x as well as particulate matter, which phased in starting in 2014 and continues through the RFP year of 2017 and beyond.

CARB's Cleaner In-Use Off-road Equipment regulation was first approved in 2007 to reduce PM_{2.5} and NO_x emissions from in-use off-road heavy-duty diesel vehicles in California such as those used in construction, mining, and industrial operations. The regulation reduces emissions of PM_{2.5} and NO_x by targeting the existing fleet and imposing idling limits, restrictions on use of older vehicles, and requirements to retrofit or replace the oldest engines. For example, Tier 0 engines could not be added to fleets after January 1, 2014, and Tier 1 engines could not be added after January 1, 2016. The regulation is phased in between January 1, 2014 and January 1, 2019.¹⁵⁹

¹⁵⁵ Title 13, California Code of Regulations, Section 2025 ("Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles"), paragraphs (e), (f), and (g), effective December 14, 2011. *See also* 77 FR 20308 at 20309-20310 (April 4, 2012) (final rule approving CARB's Truck and Bus Rule into California SIP).

¹⁵⁶ 2016 AQMP, Appendix III, Attachment B.

¹⁵⁷ *See* 81 FR 39424, June 16, 2016.

¹⁵⁸ NMOG means the combination of organic gases other than methane as calculated in 40 CFR 1066.635. Note that for this part, the organic gases are summed on a mass basis without any adjustment for photochemical reactivity.

¹⁵⁹ 2016 AQMP, Appendix VI-C, Attachment VI-C-1, p. VI-C-23 and VI-C-24.

Volatile Organic Compounds

As with other precursors, the District regulates stationary and area sources of VOC, and CARB is largely responsible for both on-road and off-road mobile sources. The 2016 AQMP highlights three stationary source VOC rules that contribute to RFP: Rule 1114 (Petroleum Refinery Coking Operations), Rule 1177 (Liquified Petroleum Gas Transfer and Dispensing), and Rule 1113 (Architectural Coatings).¹⁶⁰

As with NO_x, the majority of VOC emissions reductions that occur between the base year of 2012 and the 2017 RFP year come from on-road mobile sources and other mobile sources that are under the State's jurisdiction. CARB highlights its ACC program, which reduces emission from light- and medium-duty vehicles. The ACC program has a combined NMOG plus NO_x fleet average requirement that began in 2014.

Ammonia

With respect to ammonia, the Plan states that, while both NO_x and ammonia participate in forming ammonium nitrate (*i.e.*, secondary PM_{2.5}), NO_x emission reductions are more effective at reducing ambient PM_{2.5} than ammonia reductions.¹⁶¹ Control measures for ammonia sources are described in Appendix VI of the Plan. For example, South Coast Rules 223 and 1127, which regulate confined animal facilities and manure waste from these facilities, control ammonia, as do the District's composting measures (*i.e.*, Rules 1133, 1133.1, 1133.2 and 1133.3). These rules and the methods they use to control ammonia emissions are discussed at length in Appendix VI-B of the 2016 AQMP, and their emission projections are presented collectively under farming operations (for confined animal feeding operations and manure) or

¹⁶⁰ The District projects that revisions to Rule 1113 that it adopted after submitting the 2016 AQMP are projected to result in an additional 0.88 tpd of VOC reductions by 2019. *See* 2017 QM Report, p. 8.

¹⁶¹ 2016 AQMP, Appendix V, p. V-6-61.

waste disposal (for composting categories) in the Plan's emissions inventory.¹⁶² We discuss our evaluation of these rules for purposes of satisfying BACM requirements in section V.C of this proposed rule.

The District ascribes the reductions in ammonia during the period from 2012 to 2017 to decreases in farming operations in the South Coast air basin, as well as reductions in emissions from mobile sources largely achieved by state regulations for on-road motor vehicles.

Sulfur dioxide

Reductions of SO₂ in the South Coast nonattainment area during the period from 2012 to 2017 were mainly from mobile source reductions. The majority of the SO₂ reductions come from non-road mobile sources, primarily reductions from state regulation of ocean-going vessels.

Quantitative Milestones

The 2016 AQMP identifies a milestone date of December 31, 2017, which is the date 3 years after December 31, 2014, and a second milestone date of December 31, 2020, which is the milestone date that falls within 3 years after the applicable attainment date (December 31, 2019). The 2016 AQMP also identifies target RFP emissions levels for direct PM_{2.5}, NO_x, VOC, NH₃, and SO₂ for the 2017 milestone year, the 2019 attainment year, and the 2020 post-attainment year milestone, and adopted control measures to be implemented by each of these years in accordance with the control strategy in the Plan.¹⁶³

3. Evaluation and Proposed Actions

The 2016 PM_{2.5} Plan describes the control measures for direct PM_{2.5}, NO_x, SO₂, VOC and ammonia implemented during each year of the attainment plan and demonstrates that these measures, which provide the bases for the emissions projections in the RFP plan, are being

¹⁶² 2016 AQMP, Appendix IV-A, p. IV-A-98-103.

¹⁶³ 2016 AQMP, Appendix VI-C, pp. VI-C-6 and VI-C-7.

implemented as expeditiously as practicable. Additionally, the Plan contains projected RFP emission levels for direct PM_{2.5} and all PM_{2.5} precursors for the 2017 and 2020 milestone years and for the 2019 attainment year, based on the anticipated implementation schedule for the attainment control strategy. The Plan also demonstrates that the control strategy will achieve RFP toward attainment between the 2012 base year and the 2019 attainment year. Finally, the 2016 PM_{2.5} Plan demonstrates that, by the end of the calendar year for each milestone date for the area, emissions of direct PM_{2.5} and all PM_{2.5} precursors will be reduced at rates representing generally linear progress toward attainment. We agree with the State and District's conclusion that generally linear progress is an appropriate measure of RFP for the 2006 PM_{2.5} NAAQS in the South Coast area given that PM_{2.5} and its precursors are emitted by a large number and range of sources in the South Coast, the emission reductions needed for these pollutants are inventory wide,¹⁶⁴ and secondary particulates contribute significantly to ambient PM_{2.5} levels in the South Coast area.¹⁶⁵

Accordingly, we propose to determine that the 2016 PM_{2.5} Plan requires the annual incremental reductions in emissions of direct PM_{2.5} and PM_{2.5} precursors that are necessary for ensuring attainment of the 2006 24-hour PM_{2.5} NAAQS by December 31, 2019, in accordance with the requirements of CAA sections 171(1) and 172(c)(2) and 40 CFR 51.1012.

Additionally, the 2016 PM_{2.5} Plan identifies milestone dates that are consistent with the requirements of 40 CFR 51.1013(a)(4) and target emissions levels for direct PM_{2.5} and all PM_{2.5} precursors to be achieved by these milestone dates through implementation of the attainment control strategy. These target emission levels and associated control requirements provide for

¹⁶⁴ See generally 2016 AQMP, Appendix IV-A and B and Appendix VI-A.

¹⁶⁵ See 2016 AQMP, Appendix V, p. V-6-61.

objective evaluation of the area's progress towards attainment of the 2006 PM_{2.5} NAAQS. We propose to determine that these quantitative milestones satisfy the requirements of CAA section 189(c) and 40 CFR 51.1013.

On April 2, 2018, CARB submitted the "2017 Quantitative Milestone Report for the 2006 24-Hour PM_{2.5} National Ambient Air Quality Standards (March 2018)" ("2017 QM Report") to the EPA.¹⁶⁶ The 2017 QM report includes a certification from the Governor's designee that the 2017 quantitative milestones for the South Coast PM_{2.5} nonattainment area have been achieved and a demonstration that the adopted control strategy has been fully implemented. The 2017 QM Report also contains a demonstration of how the emissions reductions achieved to date compare to those required or scheduled to meet RFP. The State and District conclude in the 2017 QM Report that the South Coast area is on track to attain the 2006 PM_{2.5} NAAQS by the projected attainment date for the area, which is December 31, 2019. On September 7, 2018, the EPA determined that the South Coast 2017 QM Report was adequate.¹⁶⁷

F. *Contingency Measures*

1. Requirements for Contingency Measures

Under CAA section 172(c)(9), each SIP for a nonattainment area must include contingency measures to be implemented if an area fails to meet RFP ("RFP contingency measures") or fails to attain the NAAQS by the applicable attainment date ("attainment contingency measures"). Under the PM_{2.5} SIP Requirements Rule, PM_{2.5} attainment plans must include contingency measures to be implemented following a determination by the EPA that the

¹⁶⁶ Letter from Richard W. Corey, Executive Officer, CARB, to Alexis Strauss, Acting Regional Administrator, EPA Region IX, with attachment, April 2, 2018.

¹⁶⁷ Letter from Andrew R. Wheeler EPA, Acting Administrator, to Richard W. Corey, Executive Officer, CARB, regarding 2017 Quantitative Milestone Report for 2006 24-hour PM_{2.5} National Ambient Air Quality Standards, September 7, 2018.

state has failed: (1) to meet any RFP requirement in the approved SIP, (2) to meet any quantitative milestone in the approved SIP, (3) to submit a required quantitative milestone report, or (4) to attain the applicable PM_{2.5} NAAQS by the applicable attainment date. Contingency measures must be fully adopted rules or control measures that are ready to be implemented quickly upon failure to meet RFP or failure of the area to meet the relevant NAAQS by the applicable attainment date.

The purpose of contingency measures is to continue progress in reducing emissions while a state revises its SIP to meet the missed RFP requirement or to correct continuing nonattainment. Neither the CAA nor the EPA's implementing regulations establish a specific level of emissions reductions that implementation of contingency measures must achieve, but the EPA has taken the position that contingency measures should provide for emissions reductions equivalent to approximately one year of reductions needed for RFP. In general, we expect all actions needed to effect full implementation of the measures to occur within 60 days after EPA notifies the state of a failure to meet RFP or to attain.¹⁶⁸

To satisfy the requirements of 40 CFR section 51.1014, the contingency measures adopted as part of a PM_{2.5} attainment plan must: (1) consist of control measures for the area that are not otherwise included in the control strategy or that achieve emissions reductions not otherwise relied upon in the control strategy for the area (*e.g.*, to meet RACM/RACT, BACM/BACT, or MSM requirements), and (2) specify the timeframe within which their requirements become effective following any of the EPA determinations specified in 40 CFR 51.1014(a).

¹⁶⁸ General Preamble at 13512, 13543-44 and Addendum at 42014-42015.

The Ninth Circuit recently rejected the EPA's interpretation of CAA section 172(c)(9) as allowing for early implementation of contingency measures, in a decision called *Bahr v. EPA* ("Bahr").¹⁶⁹ In *Bahr*, the Ninth Circuit concluded that contingency measures must take effect at the time the area fails to make RFP or attain by the applicable attainment date, not before. Thus, within the geographic jurisdiction of the Ninth Circuit, states cannot rely on early-implemented measures to comply with the contingency measure requirements under CAA section 172(c)(9).

2. Contingency Measures in the 2016 PM_{2.5} Plan

The 2016 PM_{2.5} Plan addresses the contingency measure requirement in Chapter 4 of the 2016 AQMP and in section H of the CARB Staff Report. Chapter 4 of the 2016 AQMP addresses contingency measures for failure to attain by describing emission reductions to be achieved by an adopted measure, South Coast Rule 445 (Wood-Burning Devices). The 2016 PM_{2.5} Plan does not specifically address contingency measures for failure to meet RFP.

The CARB Staff Report provides a brief statement acknowledging the recent *Bahr* decision and committing to work with the EPA and the District to provide additional documentation or develop any needed SIP revisions consistent with that decision.

3. EPA's Evaluation and Proposed Action

As explained above in Section V.E, on April 2, 2018, CARB submitted a quantitative milestone report demonstrating that the 2017 quantitative milestones in the 2016 PM_{2.5} Plan have been achieved, and the EPA has determined that this milestone report is adequate. Because the State and District have demonstrated that the South Coast area has met its 2017 quantitative milestones, RFP contingency measures for 2017 are no longer needed. Accordingly, we are proposing to find that the RFP contingency measure requirement for the 2017 RFP milestone

¹⁶⁹ *Bahr v. EPA*, 836 F.3d 1218, at 1235-1237 (9th Cir. 2016).

year is now moot as applied to the South Coast. The sole purpose of RFP contingency measures is to provide continued progress if an area fails to meet its RFP or quantitative milestone requirements. Failure to meet RFP or quantitative milestones for 2017 would have required California to implement RFP contingency measures and to revise the 2016 PM_{2.5} Plan to assure that it still provided for attainment by the applicable attainment date of December 31, 2019. In this case, however, the 2017 QM Report demonstrates that actual emissions levels in 2017 were consistent with the approved 2017 RFP milestone year targets for direct PM_{2.5} and all precursor pollutants (NO_x, SO₂, VOCs, and ammonia) regulated in the 2016 PM_{2.5} Plan. Accordingly, RFP contingency measures for 2017 no longer have meaning or purpose, and the EPA proposes to find that the requirement for them is now moot.

We are not proposing any action at this time on the attainment contingency measure component of the 2016 PM_{2.5} Plan and will act on that component through a subsequent rulemaking, as appropriate.

G. Major Stationary Source Control Requirements under CAA Section 189(e)

Section 189(e) of the Act specifically requires that the control requirements applicable to major stationary sources of direct PM_{2.5} also apply to major stationary sources of PM_{2.5} precursors, except where the Administrator determines that such sources do not contribute significantly to PM_{2.5} levels that exceed the standards in the area.¹⁷⁰ The control requirements applicable to major stationary sources of direct PM_{2.5} in a Serious PM_{2.5} nonattainment area include, at minimum, the requirements of a NNSR permit program meeting the requirements of CAA sections 172(c)(5) and 189(b)(3).¹⁷¹ As part of our January 13, 2016 final action to

¹⁷⁰ General Preamble at 13539 and 13541-42.

¹⁷¹ CAA section 189(b)(1) (requiring that Serious area plans include provisions submitted to meet the requirements for Moderate areas in section 189(a)(1)).

reclassify the South Coast area as Serious nonattainment for the 2006 PM_{2.5} standards, we established a deadline 18 months from the effective date of our reclassification (or August 14, 2017) for the State to submit NNSR SIP revisions addressing the requirements of CAA sections 189(b)(3) and 189(e) of the Act.¹⁷²

California submitted NNSR SIP revisions to address the subpart 4 requirements for Serious PM_{2.5} nonattainment areas on May 8, 2017.¹⁷³ We are not proposing any action on this submission at this time. We will act on this submission through a subsequent rulemaking, as appropriate.

H. Motor Vehicle Emission Budgets

1. Requirements for Motor Vehicle Emissions Budgets

Section 176(c) of the CAA requires federal actions in nonattainment and maintenance areas to conform to the SIP's goals of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of the standards. Conformity to the SIP's goals means that such actions will not: (1) cause or contribute to violations of a NAAQS, (2) worsen the severity of an existing violation, or (3) delay timely attainment of any NAAQS or any interim milestone.

Actions involving Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) funding or approval are subject to the EPA's transportation conformity rule, codified at 40 CFR part 93, subpart A. Under this rule, metropolitan planning organizations (MPOs) in nonattainment and maintenance areas coordinate with state and local air quality and

¹⁷² 81 FR 1514, at 1515 (January 13, 2016).

¹⁷³ Letter from Richard W. Corey, Executive Officer, CARB, to Alexis Strauss, Acting Regional Administrator, EPA Region IX, May 8, 2017. California previously submitted NNSR SIP revisions to address the subpart 4 requirements for Moderate PM_{2.5} nonattainment areas, and the EPA approved these SIP revisions on May 1, 2015 (80 FR 24821).

transportation agencies, the EPA, FHWA, and FTA to demonstrate that an area's regional transportation plans (RTP) and transportation improvement programs (TIP) conform to the applicable SIP. This demonstration is typically done by showing that estimated emissions from existing and planned highway and transit systems are less than or equal to the motor vehicle emissions budgets ("budgets" or "MVEB") contained in all control strategy SIPs. An attainment, maintenance, or RFP SIP should include budgets for the attainment year, each required RFP milestone year, or the last year of the maintenance plan, as appropriate, for direct PM_{2.5} and PM_{2.5} precursors subject to transportation conformity analyses. Budgets are generally established for specific years and specific pollutants or precursors and must reflect all of the motor vehicle control measures contained in the attainment and RFP demonstrations.¹⁷⁴ Under the PM_{2.5} SIP Requirements Rule, Serious area PM_{2.5} attainment plans must define appropriate quantitative milestones and include projected RFP emission levels for direct PM_{2.5} and all PM_{2.5} plan precursors in each milestone year.¹⁷⁵

PM_{2.5} plans should identify budgets for direct PM_{2.5}, NO_x and all other PM_{2.5} precursors for which on-road emissions are determined to significantly contribute to PM_{2.5} levels in the area for each RFP milestone year and the attainment year, if the plan demonstrates attainment. All direct PM_{2.5} SIP budgets should include direct PM_{2.5} motor vehicle emissions from tailpipes, brake wear, and tire wear. A state must also consider whether re-entrained paved road dust, unpaved road dust, or highway and transit construction dust are significant contributors and should be included in the direct PM_{2.5} budget.¹⁷⁶

¹⁷⁴ 40 CFR 93.118(e)(4)(v).

¹⁷⁵ See 81 FR 58010, 58091-58092.

¹⁷⁶ 40 CFR 93.102(b) and 93.122(f); see also conformity rule preamble at 69 FR 40004, 40031-40036 (July 1, 2004).

For an area designated nonattainment for the 2006 PM_{2.5} NAAQS before January 15, 2015, the attainment plan must contain quantitative milestones to be achieved no later than 3 years after December 31, 2014, and every 3 years thereafter until the milestone date that falls within 3 years after the applicable attainment date.¹⁷⁷ As the EPA explained in the preamble to the PM_{2.5} SIP Requirements Rule, it is important to include a post-attainment year quantitative milestone to ensure that, if the area fails to attain by the attainment date, the EPA can continue to monitor the area's progress toward attainment while the state develops a new attainment plan.¹⁷⁸

Transportation conformity trading mechanisms are allowed under 40 CFR 93.124 where a SIP establishes appropriate mechanisms for such trades. The basis for the trading mechanism is the SIP attainment modeling that established the relative contribution of each PM_{2.5} precursor pollutant. The applicability of emission trading between conformity budgets for conformity purposes is described in 40 CFR 93.124(c).

In general, only budgets in approved SIPs can be used for transportation conformity purposes. However, section 93.118(e) of the transportation conformity rule allows budgets in a SIP submission to apply for conformity purposes before the SIP submission is approved under certain circumstances. First, there must not be any other approved SIP budgets that have been established for the same year, pollutant, and CAA requirement. Second, the EPA must find that the submitted SIP budgets are adequate for transportation conformity purposes. To be found adequate, the submission must meet the conformity adequacy requirements of 40 CFR 93.118(e)(4) and (5).

The transportation conformity rule allows for replacement of previously approved budgets by submitted motor vehicle emissions budgets that the EPA has found adequate, if the

¹⁷⁷ 40 CFR 51.1013(a)(4), *see also* 81 FR 58010, 58058 and 58063-58064 (August 24, 2016).

¹⁷⁸ *See* 81 FR 58010, 58063-58064 (August 24, 2016).

EPA has limited the duration of its prior approval to the period before it finds replacement budgets adequate.¹⁷⁹ However, the EPA will consider a state's request to limit the duration of an MVEB approval only if the request includes the following elements:

- An acknowledgement and explanation as to why the budgets under consideration have become outdated or deficient;
- A commitment to update the budgets as part of a comprehensive SIP update; and
- A request that the EPA limit the duration of its approval to the time when new budgets have been found to be adequate for transportation conformity purposes.¹⁸⁰

2. Motor Vehicle Emissions Budgets in the 2016 PM_{2.5} Plan

Consistent with the requirements of 40 CFR 51.1013(a)(4), the 2016 PM_{2.5} Plan identifies December 31, 2017, as the first quantitative milestone date (*i.e.*, the date 3 years after December 31, 2014). The second quantitative milestone date is December 31, 2020, and is also the last milestone date identified in the Plan because it falls within 3 years after the December 31, 2019 attainment date for the area.¹⁸¹

The 2016 PM_{2.5} Plan includes budgets for direct PM_{2.5}, NO_x, and VOC for 2017 and 2019 (RFP milestone year and projected attainment year, respectively) and for 2020 (post-attainment year quantitative milestone).¹⁸² The budgets were calculated using EMFAC2014, CARB's latest version of the EMFAC model for estimating emissions from on-road vehicles operating in California, and SCAG's latest modeled VMT and speed distributions from the 2016 Regional

¹⁷⁹ 40 CFR 93.118(e)(1).

¹⁸⁰ See, e.g., 67 FR 69139 (November 15, 2002), limiting our prior approval of budgets in certain California SIPs.

¹⁸¹ Under CAA section 188(c)(2), a Serious PM_{2.5} nonattainment area must attain the PM_{2.5} NAAQS as expeditiously as practicable but no later than the end of the tenth calendar year after the area is designated as nonattainment. Because the South Coast area was designated as nonattainment for the 2006 PM_{2.5} NAAQS effective December 14, 2009 (74 FR 58688, November 13, 2009), the latest permissible attainment date for the area is December 31, 2019.

¹⁸² 2016 PM_{2.5} Plan, Appendix VI-D and Table VI-D-4 (for 2017, 2019, and 2020 budgets).

Transportation Plan/Sustainable Communities Strategy adopted in April of 2016. The budgets reflect annual average emissions because those emissions are linked with the District's attainment demonstration for the 24-hour PM_{2.5} NAAQS.

The direct PM_{2.5} budgets include tailpipe, brake wear, and tire wear emissions as well as paved road dust, unpaved road dust, and road construction dust emissions.¹⁸³ The Plan includes budgets for VOC and NO_x because they are regulated precursors under the Plan. Under 40 CFR 93.102(b)(2)(v), states are not required to include budgets for SO₂ and/or NH₃ unless EPA or the state has made a finding that transportation-related emissions of any of these precursors within the nonattainment area are significant contributors to the PM_{2.5} nonattainment problem. Neither the State nor the EPA has made such a finding. The budgets included in the 2016 PM_{2.5} Plan are shown in Table 6 below.

Table 6. Budgets for the South Coast for the 2006 PM_{2.5} Standard (annual average tpd)

	2017 (RFP year)			2019 (attainment year)			2020 (post attainment RFP year)		
	PM _{2.5}	NO _x	VOC	PM _{2.5}	NO _x	VOC	PM _{2.5}	NO _x	VOC
Baseline Emissions: Exhaust, Brake and Tire wear	11.19	199.09	98.55	10.82	168.13	82.52	10.52	151.64	76.27
Paved road dust	8.02			8.15			8.22		
Unpaved road dust	0.59			0.59			0.59		
Road construction	0.23			0.25			0.26		
Total	20.03			19.81			19.59		
Budgets	21	200	99	20	169	83	20	152	77

Source: 2016 PM_{2.5} Plan, Appendix VI-D, Table VI-D-4. Budgets are rounded to the nearest whole number.

Note: we are not proposing to act on the 2020 post-attainment year RFP budgets at this time.

¹⁸³ 2016 PM_{2.5} Plan, Appendix VI-D, Table VI-D-3, p. VI-D-4.

In the submittal letter for the 2016 PM_{2.5} Plan, CARB requested that we limit the duration of our approval of the budgets to the period before the effective date of the EPA's adequacy finding for any subsequently submitted budgets.¹⁸⁴

We found the budgets for the 2017 RFP year and the 2019 attainment year adequate in a letter dated December 19, 2017.¹⁸⁵ In today's action, we are proposing to approve these budgets.

Conformity Trading Mechanism

The 2016 PM_{2.5} Plan also includes a proposed trading mechanism for transportation conformity analyses that would allow future decreases in NO_x emissions from on-road mobile sources to offset any on-road increases in PM_{2.5}, using the ratios shown in Table 7 below.¹⁸⁶ For the 2006 24-hour PM_{2.5} NAAQS the State is proposing to use the same ratios that were submitted for use with that NAAQS in the 2012 PM_{2.5} Plan.¹⁸⁷

Table 7. Trading Equivalencies for 2006 24-Hour PM_{2.5} NAAQS

	NO_x	VOC	PM_{2.5}
NO_x	1	3.151	0.067
VOC	0.317	1	0.021
PM_{2.5}	14.833	46.792	1

Source: 2016 PM_{2.5} Plan, Appendix VI-D, Table VI-D-5, and letter from Phil Fine, Deputy Executive Officer, SCAQMD, to Amy Zimpfer, Associate Director, Air Division, EPA Region 9, March 14, 2018.

To ensure that the trading mechanism does not affect the ability of the South Coast to meet the NO_x budget, the NO_x emission reductions available to supplement the PM_{2.5} budget would only be those remaining after the NO_x budget has been met.¹⁸⁸ SCAG must clearly document the calculations used in the trading when demonstrating conformity, along with any additional reductions of NO_x, PM_{2.5} or VOC emissions in the conformity analysis. It should be

¹⁸⁴ Letter from Richard W. Corey, Executive Officer, CARB, to Alexis Strauss, Acting Regional Administrator, EPA Region IX, page 3, April 27, 2017.

¹⁸⁵ *Id.*

¹⁸⁶ 2016 PM_{2.5} Plan, Appendix VI-D, Table VI-D-5.

¹⁸⁷ 82 FR 22025 (April 14, 2016).

¹⁸⁸ 2016 PM_{2.5} Plan, Appendix VI-D, page VI-D-5.

noted that the trading calculations are performed prior to the final rounding to demonstrate conformity with the budgets.

The District provided a clarification as to how the trading mechanism would be implemented in a March 14, 2018 letter.¹⁸⁹ In that letter, the District clarified that the trading mechanism identified in the 2012 AQMP for the 2006 PM_{2.5} 24-hour NAAQS, which the EPA did not previously act on, is included in the 2016 AQMP for approval by the EPA for use by SCAG in conformity determinations for the 2006 PM_{2.5} NAAQS for analysis years after the attainment year of 2019. The letter also explained why these trading ratios are still appropriate for use in conformity determinations even though they are derived from modeling conducted for the 2012 AQMP.

The 2016 PM_{2.5} Plan also provides that SCAG, the MPO responsible for demonstrating transportation conformity, shall clearly document the calculations used in the trading, along with any additional reductions of NO_x, PM_{2.5} or VOC emissions in the conformity analysis.

3. EPA's Evaluation and Proposed Actions

The EPA generally first conducts a preliminary review of budgets submitted with an attainment, RFP, or maintenance plan for adequacy, prior to acting on the plan itself, and did so with respect to the replacement PM_{2.5} budgets in the 2016 PM_{2.5} Plan. On October 18, 2017, the EPA announced the availability of the 2016 PM_{2.5} Plan with budgets and a 30-day public comment period. This announcement was posted on EPA's Adequacy Web site at:

<https://www.epa.gov/state-and-local-transportation/state-implementation-plans-sip-submissions-currently-under-epa>. The comment period for this notification ended on November 17, 2017. We

¹⁸⁹ Letter from Philip Fine, Deputy Executive Officer, Planning, Rule Development, and Area Sources, SCAQMD, to Amy Zimpfer, Associate Director, Air Division, EPA Region IX, regarding trading ratios among PM_{2.5} precursors, March 14, 2018.

did not receive any comments during this comment period. We found the budgets adequate on December 19, 2017.¹⁹⁰ A notice of the adequacy finding was published in the **Federal Register** on January 5, 2018.¹⁹¹

Based on the information about SO₂ and ammonia emissions in the Plan and in accordance with 40 CFR 93.102(b)(2)(v), we propose to find that it is not necessary to establish motor vehicle emissions budgets for transportation-related emissions of SO₂ and ammonia to attain the 2006 PM_{2.5} standards in the South Coast.

For the reasons discussed in sections V.D. and V.E. of this proposed rule, we are proposing to approve the RFP and attainment demonstrations in the 2016 PM_{2.5} Plan. The 2017 RFP and 2019 attainment budgets, as given in Table 6 of this proposed rule, are consistent with these demonstrations, are clearly identified and precisely quantified, and meet all other applicable statutory and regulatory requirements including the adequacy criteria in 93.118(e)(4) and (5). For these reasons, the EPA proposes to approve the budgets listed in Table 6 above. We provided a more detailed discussion in our adequacy letter, which can be found in the docket for today's action.

We are not taking action on the 2020 budgets at this time. Although the post-attainment year quantitative milestone is a required element of the Serious area plan, it is not necessary to demonstrate transportation conformity for 2020 or to use the 2020 budgets in transportation conformity determinations until such time as the area fails to attain the 2006 PM_{2.5} NAAQS.

Additionally, the EPA has not yet started the adequacy process for the 2020 budgets. Therefore,

¹⁹⁰ Letter from Matthew J. Lakin, Acting Director, Air Division, EPA Region IX, to Richard W. Corey, Executive Officer, CARB, December 19, 2017.

¹⁹¹ See 83 FR 679, January 5, 2018.

the EPA is not taking action on the submitted budgets for 2020 in the 2016 PM_{2.5} Plan at this time.

If the EPA were to either find adequate or approve the post-attainment milestone year budgets now, those budgets would have to be used in transportation conformity determinations that are made after the effective date of the adequacy finding or approval even if the South Coast area ultimately attains the PM_{2.5} NAAQS by the Serious area attainment date. This would mean that SCAG would be required to demonstrate conformity for the post-attainment date milestone year and all later years addressed in the conformity determination (*e.g.*, the last year of the metropolitan transportation plan) to the post-attainment date RFP budgets rather than the budgets associated with the attainment year for the area (*i.e.*, the budgets for 2019). The EPA does not believe that it is necessary to demonstrate conformity using these post-attainment year budgets in areas that either the EPA anticipates will attain by the attainment date or in areas that attain by the attainment date. The EPA has found adequate the budgets for the first milestone year (2017) and the attainment year (2019) for the South Coast PM_{2.5} nonattainment area.¹⁹²

If the EPA determines that the South Coast area has failed to attain the 2006 PM_{2.5} NAAQS by the applicable attainment date, the EPA will begin the budget adequacy and approval processes for the post-attainment year (2020) budgets. If the EPA finds the 2020 budgets adequate or approves them, those budgets will have to be used in subsequent transportation conformity determinations. The EPA believes that initiating the process to act on the submitted post-attainment year MVEBs following a determination that the area has failed to attain by the Serious area attainment date ensures that transportation activities will not cause or contribute to new violations, increase the frequency or severity of any existing violations, or delay timely

¹⁹² Letter from Matthew J. Lakin, Acting Director, Air Division, EPA Region IX, to Richard W. Corey, Executive Officer, CARB, December 19, 2017, and 83 FR 679 (January 5, 2018).

attainment or any required interim emission reductions or milestones in the South Coast nonattainment area, consistent with the requirements of CAA section 176(c)(1)(B).

We have previously approved motor vehicle emissions budgets for the 1997 annual and 24-hour PM_{2.5} NAAQS.¹⁹³ These budgets will continue to apply for the 1997 PM_{2.5} NAAQS in the South Coast area.

The EPA has reviewed the trading mechanism described on pages VI-D-5 and VI-D-6 in Appendix VI-D of the 2016 AQMP and, given the clarification letter submitted to the EPA on March 14, 2018, finds this trading mechanism appropriate for use in transportation conformity analyses in the South Coast for the 2006 PM_{2.5} NAAQS. We agree with the District that these trading ratios are still appropriate for use in transportation conformity determinations even though they are derived from modeling conducted for the 2012 AQMP. We therefore propose to approve the trading mechanism as an enforceable component of the transportation conformity program for the South Coast for the 2006 PM_{2.5} NAAQS.

In the submittal letter for the 2016 PM_{2.5} Plan, CARB requested that we limit the duration of our approval of the budgets to the period before the effective date of the EPA's adequacy finding for any subsequently submitted budgets.¹⁹⁴ The transportation conformity rule allows us to limit the approval of budgets.¹⁹⁵ CARB's request does not, however, contain an acknowledgement and explanation as to why the budgets under consideration will become outdated or a commitment to update the budgets as part of a comprehensive SIP update. Therefore, we are not proposing at this time to limit the duration of our approval of the submitted budgets. In order to limit the duration of our approval, we would need the information described

¹⁹³ 76 FR 69928, at 69951 (November 9, 2011).

¹⁹⁴ See letter dated April 27, 2017, from Richard W. Corey, Executive Officer, CARB, to Alexis Strauss, Acting Regional Administrator, EPA Region IX, page 3.

¹⁹⁵ 40 CFR 93.118(e)(1).

above to determine whether such limitation is reasonable and appropriate in this case. Once CARB has provided the necessary information, we intend to review it and take appropriate action. If we propose to limit the duration of our approval of the budgets in the 2016 PM_{2.5} Plan, we will provide the public an opportunity to comment. The duration of our approval of the submitted budgets will not be limited until we complete such a rulemaking.

VI. Summary of Proposed Actions and Request for Public Comment

Under CAA section 110(k)(3), the EPA is proposing to approve SIP revisions submitted by California to address the Act's Serious area planning requirements for the 2006 PM_{2.5} NAAQS in the South Coast nonattainment area. Specifically, the EPA is proposing to approve the following elements of the 2016 PM_{2.5} Plan:

1. A comprehensive, accurate, current inventory of actual emissions from all sources of PM_{2.5} and PM_{2.5} precursors in the area (CAA section 172(c)(3));
2. Provisions to assure that BACM, including BACT, for the control of direct PM_{2.5} and PM_{2.5} precursors shall be implemented no later than 4 years after the area is reclassified (CAA section 189(b)(1)(B));
3. A demonstration (including air quality modeling) that the plan provides for attainment as expeditiously as practicable but no later than December 31, 2019 (CAA sections 188(c)(2) and 189(b)(1)(A));
4. Plan provisions that require RFP (CAA section 172(c)(2));
5. Quantitative milestones that are to be achieved every 3 years until the area is redesignated attainment and which demonstrate RFP toward attainment by the applicable date (CAA section 189(c)); and

6. 2017 and 2019 motor vehicle emissions budgets, as shown in Table 6 of this proposed rule, because they are derived from an approvable RFP plan and attainment demonstration and meet the requirements of CAA section 176(c) and 40 CFR part 93, subpart A.

The EPA is also proposing to approve the interpollutant trading mechanism provided in the 2016 PM_{2.5} Plan and clarified in a March 14, 2018 letter from the District for use in transportation conformity analyses for the 2006 PM_{2.5} NAAQS, in accordance with 40 CFR 93.124. We are not proposing any action at this time on the attainment contingency measure component of the 2016 PM_{2.5} Plan. Finally, the EPA is proposing to find that the requirement for contingency measures to be undertaken if the area fails to make reasonable further progress under CAA section 172(c)(9) is moot as applied to the 2017 milestone year, because the State and District have demonstrated to the EPA's satisfaction that the 2017 milestones have been met.

We will accept comments from the public on these proposals for the next 30 days. The deadline and instructions for submission of comments are provided in the "DATES" and "ADDRESSES" sections at the beginning of this preamble.

VII. Statutory and Executive Order Reviews

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, the EPA's role is to approve state choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this proposed action merely proposes to approve state law as meeting federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this proposed action:

- is not a “significant regulatory action” subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);
- is not an Executive Order 13771 (82 FR 9339, February 2, 2017) regulatory action because SIP approvals are exempted under Executive Order 12866;
- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.);
- is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 et seq.);
- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);
- does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act; and

- does not provide the EPA with the discretionary authority to address disproportionate human health or environmental effects with practical, appropriate, and legally permissible methods under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, the SIP is not approved to apply on any Indian reservation land or in any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications and will not impose substantial direct costs on tribal governments or preempt tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Ammonia, Incorporation by reference, Intergovernmental relations, Oxides of nitrogen, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compounds.

AUTHORITY: 42 U.S.C. 7401 *et seq.*

Dated: September 24, 2018.

Deborah Jordan,
Acting Regional Administrator,
Region 9.

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